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DOCTORAL DISSERTATION

UNIVERSITY AND BUSINESS COOPERATION GOVERNANCE IN LITHUANIA

SOCIAL SCIENCES,
MANAGEMENT (03 S)
VILNIUS, 2016

MYKOLAS ROMERIS
UNIVERSITY

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PADĖKA

Nuoširdžiai dėkoju savo moksliniam vadovui profesoriui Alvydui Raipai už vertingus patarimus ir pastabas, gilias įžvalgas ir prasmingas konsultacijas. Jūs suteikėte mano disertacijai kryptį, aiškumą, ką turiu daryti ir laisvę nieko nedaryti, kai man reikėjo skirti laiko apmąstymams ir refleksijai. Ačiū už jūsų išmintingą vadovavimą ir rūpestį.

Dėkoju kitam moksliniam vadovui profesoriui Adolfui Kaziliūnui, lydėjusiam mane pradiniame mokslinių paieškų etape. Ačiū už jūsų kantrybę, išmintį ir mokslinio kuklumo pavyzdį.

Esu be galo dėkinga mokslo ir verslo organizacijų vadovams ir atstovams, sutikusiems dalyvauti disertacijos tyrime. Ačiū jums už skirtą laiką, dalijimąsi patirtimi ir įžvalgomis. Kiekvienas iš jūsų padėjote man rasti atsakymus į mokslinius klausimus, praturtinote disertaciją ir prisidėjote prie jos kokybės.

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Visų svarbiausia, ši disertacija niekada nebūtų išvydusi dienos šviesos be mano šeimos palaikymo. Nuoširdžiai ačiū vyrui Dangiui už jo meilę ir supratimą, skatinimą tobulėti, prasmingus patarimus, pozityvią kritiką ir kartu leidimą man eiti savo mokslinių paieškų keliu. Esu be galo dėkinga savo sūnums, Aidui ir Dainiui, už jų didelę meilę ir įvestą discipliną – jų sprendimu nuo aštuntos valandos vakaro namie buvo knygų skaitymo metas. Už visokeriopą pagalbą dėkoju anytai Aldonai Gudelienei, kuri pasirūpindavo šeima ir namais, kad aš galėčiau skirti laiko disertacijai. Dėkoju broliui Simonui ir sesei Mildai už visada buvimą šalia. Šią disertaciją skiriu savo tėvų – Tomo ir Laimos Aleksų atminimui.

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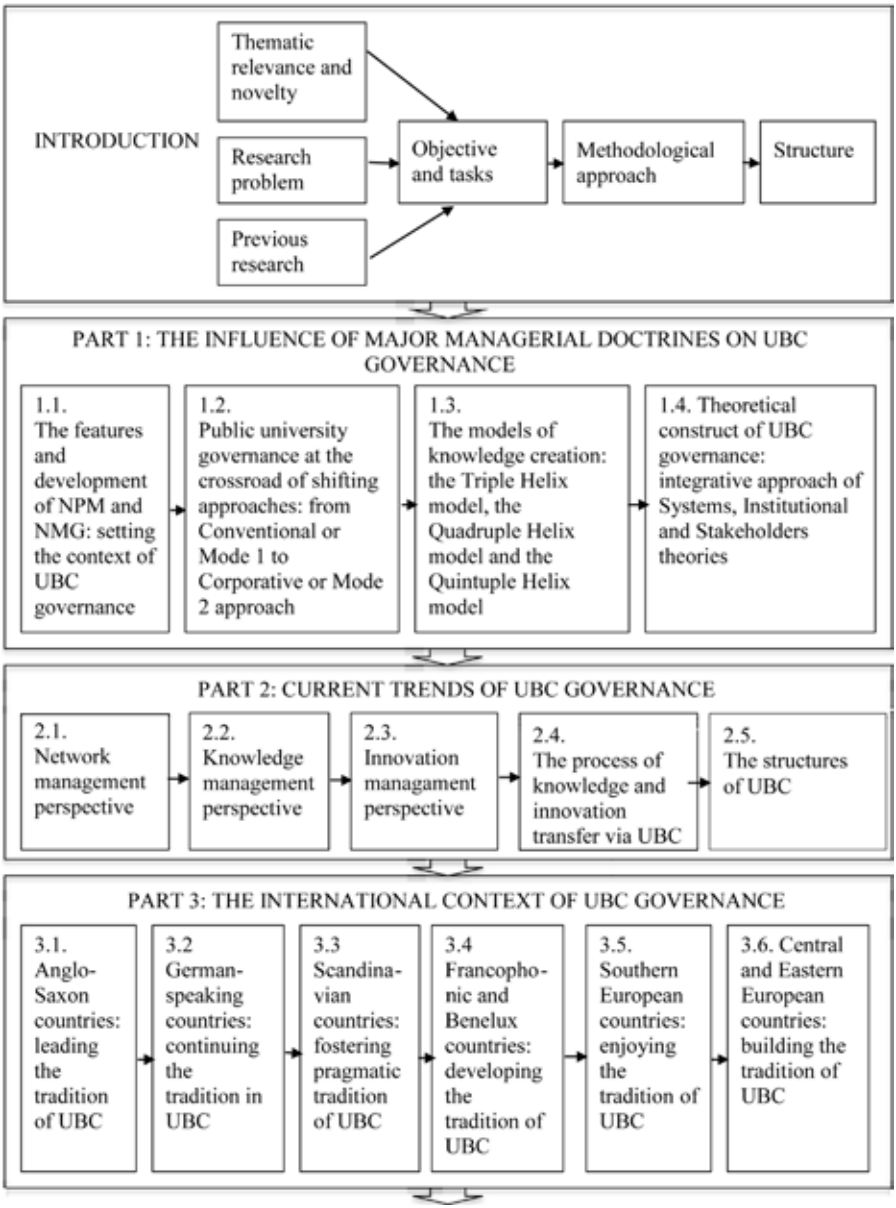
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LIST OF ABBREVIATIONS

EC – European Commission
R&D – Research and development
R&DI – Research, development and innovation
IM – Innovation management
IPR – Intellectual property rights
KM – Knowledge management
KTO – Knowledge transfer office
NM – Network management
NPG – New Public Governance
NPM – New Public Management
PPP – Public Private Partnership
STP – Science and technology parks
TTO – Technology transfer office
UBC – University and business cooperation

STRUCTURE OF THE DISSERTATION



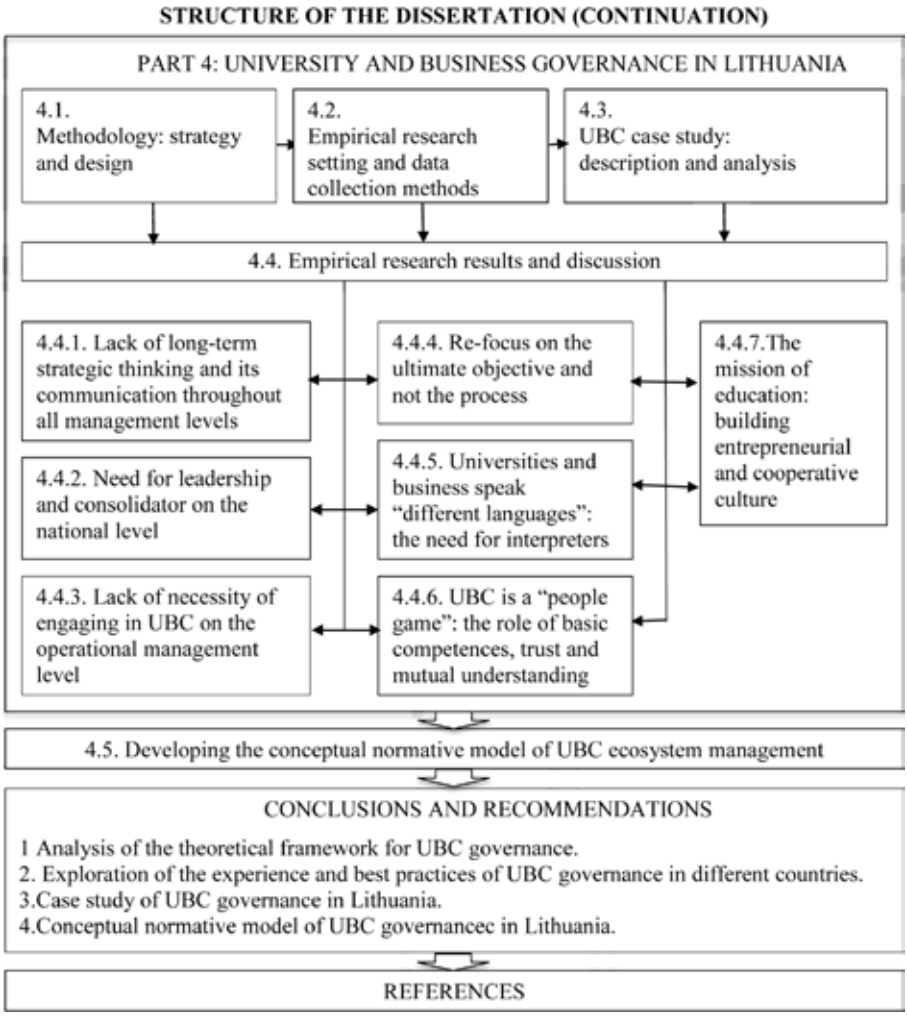


Figure 1. Structure of the dissertation
(*Source*: developed by the author)

INTRODUCTION

Thematic relevance and novelty. The generation of new knowledge and its transfer to innovative and market-attractive products and/or services is the driving force of a knowledge-based society and the major determinant of a country's competitive position in the global market. The technologically advanced modern world prompts transformations: new ways of knowledge generation, transfer and application are emerging, market limitations are decreasing, universities, business and government institutions are fast learning to cooperate in multi-collaborative innovation systems and networks of value creation. Numerous legal, economic, managerial, cultural, psychological, and other factors speeding up innovation process have been discovered and investigated. Although researchers agree that transfer of new knowledge from the lab of researcher to the workplace of a practitioner is the main way to accelerate the progress of society (Phillips, 2010), the concept of university and business cooperation (UBC) governance from university, business and government perspectives is becoming the major challenge globally.

Furthermore, universities, business companies and government institutions globally have undergone significant transformations during the last two decades. For centuries university mission was two fold – teaching and research. Entrepreneurship, providing commercially-based service to society and cooperation with business was not even a matter of academic and public discourse. Nowadays universities find themselves struggling between Conventional or Mode 1 and Corporative or Mode 2 approaches behind their mission that were influenced by the expansion of the New Public Management (NPM) and the New Public Governance (NPG) doctrines. Corporative or Mode 2 approach characterized by entrepreneurship, service to society, research orientation to overcome societal and technological challenges is becoming more widespread. Therefore, universities face the need to have close and functioning relations with private and public sectors (Etzkowitz and Leydesdorff, 2000).

Business environment has also changed dramatically during the last couple of decades. Globalisation, advancement of information and communication technologies and the increased level of education has decreased market limitations, prompted e-business and internet of things, facilitated better access to financial and human resources. To remain competitive and satisfy better market demand business companies have to innovate, develop research-based products and services, access to knowledge bases and talents.

Public governance has also experienced transformations during the last couple of decades. The emergence of e-government, the evolution of NPM and NPG, participation in international networks and alliances has changed the geography of national public governance systems globally. For example, the creation of the European Union's ten-year growth and jobs strategy Europe 2020 conditions a need to overcome societal challenges of education and employment, research and development, climate and energy, social inclusion and poverty reduction for a smart, sustainable and inclusive growth. It can be achieved by enhancing knowledge economy that is built on close and functioning relations between universities, private sector and government. Thus, the discussions on university-business-government cooperation are no longer about whether it is necessary but rather how to cooperate best for the benefit of all stakeholders.

Lithuania has a specific context of UBC. The Restoration of Independence in the 1990s has changed university, business and government systems and the landscape for innovation. Together with other Eastern and Central European countries, Lithuania has experienced transformations from socialist to market economies. Although market mentality was finding root in Lithuanian society, enhancement of UBC was not the focus of societal and academic discourse. Public universities continued to be state-owned, mostly financed from the national budget, business companies operated in their own realm and UBC was not a public policy focus. The situation changed during the last decade due to the evolution of the NPM and NPG doctrines and the shift from Conventional or Mode 1 o Corporative or Mode 2 approach to public university governance. The basic funding for public universities started to decrease, they had to turn and adapt to competitive funding sources, UBC enhancing national schemes such as valleys, science and technology parks, and clusters with investment from the national budget and structural funds for the period of 2007-2013 were introduced, UBC has appeared at the centre of public discourse. In addition, the incentives from the European Commission, best practice and examples from Western Europe and the Northern America aimed at building closer knowledge triangle between university, industry and government has speeded up UBC processes in Lithuania. The development of innovation processes in Lithuania are revealed in international rankings. For example, the data of the Global Competitiveness Report carried out by World Economic Forum ranked Lithuania 48th out of 148 countries in 2013–2014 (Global Competitiveness Report, 2013–2014) and the country moved upward to the 41st position in 2014–2015 (Global Competitiveness Report, 2014–2015). According to the indicator 'university and industry collaboration in R&D' Lithuania ranked 28th position globally in 2014–2015 (Global Competitiveness Report, 2014–2015). UBC governance from university, business and government perspectives is another step to be taken.

The dissertational research emerged out of my personal search for research-based solutions to daily practice challenges and initial one year observation that UBC ecosystem is not functioning efficiently in Lithuania due to the lack of managerial approach. The dissertation raises questions and analyses the shift in human mindset and behaviour during the period of Lithuanian Independence, carries out comparative case study and scholarly debate on a variety of schools of thought, approaches and paradigms, examines the experience and practice of foreign countries aiming to provide research-based solutions for UBC governance in Lithuania.

Research problem. The spread of neoliberal ideas and their implementation mechanisms at the end of 20th century has changed the landscape of public policy and governance in Lithuania. Different aspects of public policy, governance and public service delivery have been examined by numerous foreign and Lithuanian researchers. Although there is a variety of research results evaluating the shifting approach to public service delivery, the research on services provided by public universities, their cooperation with stakeholders in the networks of value creation, knowledge and/technology transfer is fragmented and inconsistent. A few research has been carried out on the content of public service delivered by universities, their quality, support structures, financing mechanisms and return on investment. Some questions still remain unanswered. How and why public university governance has changed during the last decades? What are the dominating paradigms

and approaches behind modern public university governance? What is the experience and best practice of foreign countries in managing public university cooperation with their stakeholders, including business companies? What public policy, governance and business management measures can be applied to enhance UBC in Lithuania? What conceptual normative governance models can stipulate UBC practice in Lithuania and bring optimal benefit to all stakeholders?

The research framework was constructed with regard to the evolution and enactment of NPM and NPG, the shift from Conventional or Mode 1 to Corporative or Mode 2 approach to public university governance, the development of knowledge management models from the Triple Helix through the Quadruple Helix to the Quintuple Helix, network, knowledge and innovation management perspectives. The theoretical foundation was designed by integrating Systems theory, Institutional theory and Stakeholders theory. UBC phenomenon in Lithuania was examined from holistic, integral, dynamic, systemic and processual approach. The major research problem raised in this dissertation is how management theory can enhance UBC practice in Lithuania under shifting approaches to university, business and public governance.

Previous research. As public university and UBC governance can be traced to the development of NPM and NPG, it is noteworthy to mention the most outstanding theoreticians in the field. The works of Ch. Hood, Ch. Pollitt, G. Bouckaert, T. Bovaird, E. Lofter, B.G. Peters, T. Gaebler, D. Osborne, D. McNabb make the foundation of NPM and NPG research. It is an evolving process that constantly transforms the content and form of NPM and NPG, eliminates its dysfunctions, deconstructs it and adapts to the current needs and expectations of the society. Public policy and governance, and, consequently, public university and UBC governance constantly appears under competing forces and ideological movements. The transformations of public policy aimed to increase the creation of public value include strategic management, programme and project based allocation of funding, inter-sectorial partnership, stakeholder and citizen involvement, etc. Different elements of evolving public governance including NPM and NPG approaches have been explored in the works of Lithuanian researchers A. Raipa, A. Kaziliūnas, S. Puškorius, A. Guogis, D. Gudelis, B. Melnikas, V. Nakrošis, V. Domarkas, V. Smalskys, I. Mačerinskienė, etc. They have examined the public governance system and processes, identified the major factors that had an impact on the volume and efficiency of reforms.

The phenomenon of public university governance as public service provider and its cooperation with stakeholders, including business companies is rather new and has not received much research interest in Lithuania while the phenomenon, its dynamics, elements, participants, impact on regional and national socio-economic processes is widely covered by research abroad. The major globally recognised research groups carrying out research on UBC are affiliated with Stanford University Triple Helix Research Group (USA), Massachusetts Institute of Technology (USA), Silicon Flatirons at Colorado University (USA), University of British Columbia (Canada), London School of Economics (UK), the University of Manchester (UK), Munster University of Applied Sciences (Germany), etc. The most prominent international UBC researchers include H. Etzkowitz, L. Leydesdorff, D. Audretch, E.P. Berman, H. Nowotny, M. Wright, A. Lockett, P. D'Este, P. Patel, T. Baacken, A. Meerman, T. Davey, N. Fukugawa, etc.

The relationships and interaction between different participants of UBC ecosystem has received some attention in Lithuanian scientific literature. The major researchers of network management include A. Raipa who examined the network management in the structure of transformation of public governance (Raipa, 2007; Raipa, 2012), dimensions of the efficiency of public and private partnerships (Raipa et al, 2008), risk management in innovation management processes (Raipa and Giedraitytė, 2012), theoretical aspects of innovation in public governance (Raipa and Jurkšienė, 2013), organizational preparedness for change management (Raipa, 2013). A. Kaziliūnas explored the quality analysis, planning and audit (Kaziliūnas, 2006), quality management systems for sustainable organizational development (Kaziliūnas, 2008), development of knowledge model for quality management programmes (Kaziliūnas, 2011). D. Gudelis analysed the phenomenon of public-private partnership (Gudelis and Rozenbergaitė, 2004), models of interaction between public and private sectors (Gudelis, 2012). B. Melnikas analysed the society of transformations through the processes of knowledge economy, socio-economic development, culture, innovation, internationalisation and globalisation (Melnikas, 2011; Melnikas, 2013). B. Mikulskienė examined decision-making model based on stakeholder involvement into public policy formation processes in the area of education and R&D and health sectors (Mikulskienė, 2013). R. Jucevičius has explored the empowerment of social and technological innovations (Jucevičius et al., 2009), R. Jucevičius and V. Kinduris analysed knowledge networks for innovations, motives and benefits (R. Jucevičius and V. Kinduris, 2011). A. Augustinaitis has examined management direction in knowledges society and its relation to public administration (Augustinaitis, 2003; Augustinaitis, 2004; Augustinaitis, 2005). G. Viliūnas analysed the new knowledge paradigm and the transformation of research system management (Viliūnas, 2006). A.G. Raišienė examined the Lithuanian organization case studies from effective management perspective (Raišienė et al., 2014). I. Mačerinskienė examined the business perspective and intellectual capital measurement models (Mačerinskienė and Aleknavičiūtė, 2015), company added value relation to intellectual capital (Mačerinskienė and Survilaitė, 2011).

N. Vasiljevienė examined positive initiatives for organizational change and transformation (Vasiljevienė and Tyagi, 2012), search for integrity for responsible business performance (Vasiljevienė, 2014). Recently several doctoral dissertations have been defended in the areas related to UBC governance. For example, Social Responsibility in the Management of University Research (Tauginienė, 2015), Models for Measuring Competitiveness of Science and Technology Parks (Leichteris, 2011), Knowledge Technology Transfer Policy in Lithuania (Kiškienė, 2010), University Research Modelling in the Context of Transformational Processes (Lanskoronskis, 2009).

Research on UBC governance internationally takes the following network, knowledge and innovation management perspectives.

The characteristics and major peculiarities of network management (NM) from socio-economic perspective were examined in the works of D. Scott, M.E. Newman, R. Agranoff, G. Ahuja, P. Boragatti, M.W. Cohen, etc. NM approach to UBC ecosystem management is examined from the network participants point of view including individual researchers (Etzkowitz and Leydesdorff, 1997; Feldman and Desrochers, 2003; an Rijnsoever et al., 2008), public university or business company (Santoro and Chakrabarti, 2002; Knoben, 2008; Giuliani and Arza, 2009; Berman, 2012), or public governance institutions' point

of view (Barzelay, 1992; Agranoff and McGuire, 2003; Sorensen and Torfing, 2007; Boardman, 2008; McNabb, 2009; Koliba et al., 2011).

The major categories of factors influencing individual researcher's participation in UBC include demographic characteristics (gender, age), educational background (degree obtained, skills, capabilities, etc.), and position in the academic community (academic status, scientific output, experience, etc.) (Agrawal and Henderson, 2002; Bercovitz and Feldman, 2008; Friedman and Silberman, 2003; Di Gregorio and Shane, 2003; Landry et al., 2005; Santoro and Chakrabarti, 2002; Schartinger et al., 2001; Audretch and Erdem, 2004). Organizational level factors influencing university or business company participation in UBC include geographical proximity, the quality of R&DI and educational processes, performance evaluation and funding, knowledge and technology transfer support systems, disciplinary affiliation, organizational culture (O'Shea et al., 2005; Lockett et al., 2003; Lockett and Wright, 2004; Landry et al., 2006).Public governance level factors influencing UBC has been examined with regard to the evolution of NPM and NPG and the shift from Conventional or Mode 1 and Corporative or Mode 2 approach (Nowotny et al., 2001), the concepts of the Triple Helix, Quadruple Helix and Quintuple Helix models (Etzkowitz and Leydesdorff, 1997; Etzkowitz, 2000; Carayannis et al., 2012; Audretch and Erdem, 2004), development of international, national and regional UBC support structures (Agranoff and McGuire, 2003; Sorensen and Torfing, 2007; McNabb 2009; Berman, 2012).

The concept of knowledge management (KM) has been examined under the conditions of neoliberal reforms (Kim, 2008) or broader socio-economic system (Havas, 2008). The process of knowledge management has been explored including knowledge identification, encoding-decoding, dissemination, evaluation, implementation and securing (Probst, 1997; Probst et al., 2006). Innovation management (IM) including socio-economic implications, sociological, psychological and political perspectives have been explored (Osborne and Brown, 2005). Several researchers have examined capacity to generate knowledge and exploit intellectual property rights via spin-offs (Friedman and Silberman, 2003; Ndonzuau et al., 2002), patenting (Landry et al., 2005; Wright et al., 2008; Thursby et al., 2007; Lissoni et al., 2008, Fabrizio and Di Minin, 2008), licensing (Siegel et al., 2003b; Link et al., 2003; Jensen et al., 2003; Thursby and Kemp, 2002), contract research or joint research agreements (Schartinger et al., 2001), joint scientific publications (Friedman and Silberman, 2003; Thursby and Kemp, 2002; Hall et al., 2001; D'Este, P. Patel, 2007).

Innovation management including socio-economic implications, sociological, psychological and political perspectives have been explored (Osborne and Brown, 2005). Several researchers have examined the capacity to generate knowledge and exploit intellectual property rights via spin-offs (Friedman and Silberman, 2003; Ndonzuau et al., 2002), patenting (Landry et al., 2005; Wright et al., 2008; Thursby et al., 2007; Lissoni et al., 2008, Fabrizio and Di 16 Minin, 2008), licensing (Siegel et al., 2003b; Link et al., 2003; Jensen et al., 2003; Thursby and Kemp, 2002), contract research or joint research agreements (Schartinger et al., 2001), joint scientific publications (Friedman and Silberman, 2003; Thursby and Kemp, 2002; Hall et al., 2001; D'Este, P. Patel, 2007).

The claims of the dissertation:

1. Theoretical framework for UBC governance can be examined with regard to the evolution of New Public Management and New Public Governance doctrines, the shift from Conventional or Mode 1 to Corporative or Mode 2 approach of university governance, and the knowledge creation and management models of the Triple Helix, the Quadruple Helix and the Quintuple Helix as they reflect the transition of societal values and mentality.
2. University and business divide in Lithuania is caused by weak UBC traditions, lack of strategic thinking and its communication, lack of leadership and consolidating part on the national level, missing cooperative and entrepreneurial culture.
3. Network, knowledge and innovation management approach needs to be taken into consideration for successful UBC governance.

The object of the dissertational research is UBC governance in Lithuania.

The purpose of the dissertational research is to explore the concept of UBC governance and on the basis of theoretical and empirical research results develop a conceptual normative model that can enhance UBC governance practice in Lithuania.

The tasks of the dissertational research are the following:

1. To analyse theoretical framework of UBC governance;
2. To explore the experience and best practices of UBC governance in different European and North American countries;
3. To carry out case study of UBC governance in Lithuania;
4. To develop the conceptual normative model for UBC governance in Lithuania.

Methodological approach for the dissertational research is a multi-method approach. The dissertational research was carried out by applying inductive and constructivism strategies. The holistic approach to UBC governance encompassing a broad and complex combination of social, legal, and managerial aspects of UBC ecosystem relationships and interactions between different stakeholders was taken (Berg, 2007).

Phenomenological strategy of social cognition was applied to examine the phenomenon of UBC governance and raise the fundamental questions about the meaning, essence and structure of the lived experience of UBC governance for the UBC ecosystem people in Lithuania (Patton, 2002; Hammersley, 2011; Gerring, 2012). The research was built on phenomenological suggestion that the world is constructed the way people understand it and that there is no separate objective reality for UBC ecosystem people except what they know their experience was and what it meant to them (Patton, 2008; Bergh and Ketchen, 2011). The dissertational research was based on the presumption that "the only way for us to really know what another person experiences, is to experience the phenomenon as directly as possible for ourselves" (Patton, 2002, p. 106).

Heuristic inquiry as a part of phenomenological strategy focusing on the personal experience and insights of the researcher was chosen as it enabled to connect the experiences of research participants, was concerned with meaning versus measurements, essence versus appearance, quality versus quantity, experience versus behaviour, and was built on the notion that discovery comes from direct personal contact to research object

(Patton, 2002; Gerring, 2012). The theoretical and empirical research was grounded on the assumption that any information a researcher collects can potentially be used to answer the research question or to solve the research problem. Therefore, it included documentary analysis, observation of UBC ecosystem participant behaviour covering development of their thinking and actions, formal and informal discussions during all research stages in five year period (Berg, 2007; Hammersley, 2011; Gerring, 2012).

Integration of action research and fieldwork as knowledge acquisition strategy was chosen as it was based on the principle to research by acting and to act by researching which was relevant to my past and current work experience as a university research manager (Berg, 2007; Brannic and Coghlan, 2014;Hammersley, 2011; Patton, 2002;). Action and fieldwork research was aimed to improve the work with UBC people or their groups, was widely accepted in management science and focused on research methods that took into account interactive, practice-oriented activities (Berg, 2007), as in the case of UBC governance. As a researcher engaged in the fieldwork research I would take one of four roles: participant, participant as observer, observer as participant and observer. In most cases I took on the participant as observer role due to my integrative position as a university research manager and Ph.D. student. As a researcher and a practitioner I had to constantly compare the received information with my personal experience and to view the observed reality from the position of a distant researcher and participant of the UBC ecosystem at the same time.

My major role as action researcher was to work "with and alongside the group or community under study, not outside as an objective observer or external consultant" (Berg, 2007, p. 230). I also contributed to research-based expertise on UBC governance as participant in the process, cooperated with other stakeholders, served as a partner to the researched population (Berg, 2007). Fieldwork method required intense and long-term observation of activities and interactions of participants of UBC ecosystem, hearing and reflecting on what university, business and public governance employees say, how do they behave and treat each other (Patton, 2002; Gerring, 2012).

Qualitative case study strategy was also chosen for the dissertation because it provided depth, richness, and detail to really understand patterns of the research unit, that is UBC ecosystem in Lithuania (Patton, 2002; Gerring, 2012). In addition, it allowed to concentrate on the single phenomenon and uncover the system and interaction of significant factors characteristic of UBC governance in Lithuania. It also enabled to capture various nuances, patterns and more latent elements that other research approaches might have overlooked (Berg, 2007; Gerring, 2012). The aim of the qualitative case study was to analyse UBC governance in Lithuania "in depth and detail, holistically, and in context" (Patton, 2002, p. 55). Although qualitative case study is understood in different ways, in the context of this dissertational research it was comprehended as "an approach capable of examining simple and complex phenomenon, with units of analysis varying from single individuals to large corporations and business; it entails a variety of lines of action in its data-gathering segments, and can meaningfully make use of and contribute to the application of theory" (Yin, 2003 as cited by Berg, 2007, p. 283). The explanatory and intrinsic in-depth case study design was chosen because it could be used in complex studies of organisations or communities, as in the case of UBC ecosystem.

Moreover, a systemic-processual approach was chosen in order to understand, and address comprehensively the overall system of UBC, relationships between its various

elements, relations, their influence to each other and the process of establishing and maintaining UBC. Sustainable approach was also regarded to ensure that measures designed and implemented during the dissertational research would generate continuous benefits to all UBC stakeholders.

The major stages of dissertational research were the following: 1) identifying the research question, 2) collecting information to answer the research question by applying such methods as examination of scientific and methodological literature, documentary analysis, comparative case analysis, case study, and expert interviews, 3) analysing and interpreting the information and 4) providing potential solution of the questions identified during the first stage in the form a conceptual normative model (Berg, 2007). The research consisted of theoretical meta-analysis and empirical research. Theoretical meta-analysis included systematic and comparative analysis of scientific literature. The empirical research was carried out by implementing the principle of triangulation and integrating different qualitative research methods: documentary analysis, comparative case analysis, case study and semi-structured in-depth expert interviews.

Documentary analysis as data and information collection method was chosen because documented strategies, mission and vision statements, statutes, etc. constitute a particularly rich source of information about universities, business companies and public governance. UBC ecosystem players' especially public governance produce numerous documentary records. Thus, documentary strategy and technique analysis was a part of the research and evaluation of the status quo (Patton, 2002; Hammersley, 2011). A documentary analysis was carried out aiming to explore and compare official statements found in public documents – national and organizational agendas. They provided much information, including strategies, goals, measures and decisions regarding UBC.

Interview method was chosen for empirical research based on the assumption that it is noteworthy to know informant attitudes, evaluation and opinion. The purpose of the in-depth semi-structured expert interview method was to enter in the informant's perspective and explore the reality the way participants of UBC ecosystem comprehend it. As methodological literature suggests, the interview method in a qualitative research was also an observation enabling not only to hear what informant was saying but also how he/she spoke and behaved. The interview method allowed to receive the information not only through verbal answers but also through emotional reactions, informants could be chosen according to their intellectual and experience level as well as attitude towards UBC (Patton, 2002; Hammersley, 2011).

Simple modelling and logical construction methods were applied for the development of the conceptual normative UBC governance model. It entailed two major stages: 1) priority setting based on the main areas in need of improvement and/or main areas where the potential for UBC lies; 2) process of drafting the conceptual normative model including major factors and constituencies.

Scientific novelty include innovative application of methodology, holistic approach and identification of dominant theoretical perspectives. UBC governance phenomenon was examined with regard to the evolution of NPM and NPG and the shift from Conventional or Mode 1 to Corporative or Mode 2 approach and by integrating Systems, Institutional and Stakeholder theories. Current trends of UBC governance phenomenon were explored

by applying network management and knowledge and innovation management theoretical constructs. A unique and innovative conceptual normative model for UBC governance applicable to the Lithuanian context was designed. Finally, UBC governance concept internationally was supplemented by Lithuanian experience and practice.

The outcome of the dissertational research includes innovative application of methodology, theoretical meta-analysis and integrative approach to NPM, NPG, the shift from Conventional or Mode 1 to Corporative or Mode 2 approach, Systems, Institutional and Stakeholder theories, network and knowledge management perspectives, comparative case analysis of UBC governance in Europe and North America, case study of Lithuanian UBC governance ecosystem, and the conceptual normative model of UBC governance applicable to Lithuanian context.

Practical value and impact of the dissertation could be outlined from the university, business and public governance perspectives. The research outcome can have a practical value and impact on behaviour shift (UBC ecosystem participants would become more UBC sensitive, leaders would become aware of UBC motivational systems and incentives, etc.) that later can be measured by surveys or other behaviour change measurement methods. Furthermore, availability of the research outcome can strategically position UBC within university and business strategies, the measures of which could be managed, regularly monitored and sustainable in a long run. Human resource management can be modernized through UBC governance policies, practices and processes. In addition, the research outcome can be used for developing and implementing national UBC governance strategies and agendas. It can be used for research evaluation, university performance evaluation, benchmarking Lithuanian universities, their units, individual researchers. The research identified the problems of UBC governance in Lithuania and proposed solutions as well as further development directions. Finally, the research outcome could be used in further research and learning, both formal and informal, processes.

Major definitions

Applied research means the experimental and/or theoretical operations carried out for acquiring new knowledge and primarily aimed at attaining specific practical objectives or at practical problems.

Basic research means experimental and/or theoretical operations which are carried out primarily to acquire new knowledge about the essence of phenomena and/or observed reality without aiming, at the time of research, to use the obtained results for a specific purpose.

Cooperation refers to the activity performed by the synergetic interaction of two or more parties aiming to achieve a common objective for a mutual benefit.

Entrepreneurship refers to personal way of thinking and the social, managerial and other expertise, enabling to adapt the available knowledge in everyday life, i.e., specific skills, providing an opportunity not only to organize one's own business but also to take the risk.

Innovation means implementation of a new or significantly improved product (goods or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relationships.

Modelling refers to disclosure of certain objects or their systems, processes, relations and behaviour by developing and exploring models.

Research, experimental development and innovation (R&DI) means a systematic creative activity of the study of nature, man, culture and society, and the use of the results of such activity.

Researcher refers to a person having higher education, who develops knowledge, conceptualizes or creates new products, processes, methods and systems or directs research and experimental (social, cultural) development projects.

Smart specialisation means advantages and potential of the institutions of science and studies, business and economic sectors as response to the global and national challenges.

University-business cooperation (UBC) is the collaboration of university and business with the support of government for mutual and societal benefit.

UBC ecosystem means a network of interrelated individuals and organisations, their linkages and means facilitating the development of innovation and /or knowledge and technology transfer.

Structure

The dissertation is structured in four main sections. Part 1 sets out the theoretical framework for the analysis of UBC governance including the features and evolution of NPM and NPG, the shift from Conventional or Mode 1 approach to Corporative or Mode 2 approach to public university governance, the development of the models of knowledge creation including the Triple Helix, the Quadruple Helix and the Quintuple Helix models, the integrative construct of Systems, Institutional and Stakeholders theories. Part 2 examines current trends of UBC governance including network, knowledge and innovation management perspectives. Part 3 discusses the international context of UBC governance including the experience and practice of UBC governance in different European and North American countries. Part 4 provides empirical research including methodology, data gathering methods, empirical research results and discussion received from documentary analysis, case study and semi-structured in-depth expert interviews.

1. THEORETICAL FRAMEWORK OF UNIVERSITY AND BUSINESS COOPERATION GOVERNANCE

Part 1 will provide a theoretical framework for analysing UBC governance. Section 1.1 will explore the influence of major managerial doctrines on UBC governance including NPM and NPG and the shift from Conventional or Mode 1 to Corporative or Mode 2 approach. Section 1.2 will explore the development of knowledge management models from the Triple Helix through the Quadruple Helix to the Quintuple Helix model. Section 1.3 examine the integrative approach to Systems, Institutional and Stakeholder theories with regard to UBC governance. Section 1.4 will present current trends of UBC governance including NM, KM and IM.

1.1. The features and development of New Public Management and New Public Governance: setting the context of university and business cooperation governance

NPM is an important doctrine in examining UBC governance. It refers to government policies aimed at modernization and efficiency of the public sector that prevailed since the 1980s and enhanced the emergence and expansion of Corporative or Mode 2 approach touniversity governance at the turn of the centuries. Efficiency refers to the relationship between desired performance results and complex set of resources and inputs used to achieve those results (Puškorius, 2006). NMP and NPG examine how public sector should be managed and how state-owned institutions should deliver their services (Lane, 2000). NMP is also understood as a movement of public sector reforms the major idea of which was the introduction of market-oriented management culture into the public sector aimed to better allocate public budget resources and dominated by 3 major principles: economy, efficiency, and effectiveness. The concept of NMP was first defined in 1991 by Christopher Hood in the article *Public Management for All Seasons*? He called the managerial novelties transferred from the private and public sector *managerialism* (Pollitt, 1990). The phenomenon was also called market-based public administration (Lan and Rosenbloom, 1992), post-bureaucratic paradigm (Barzelay, 1992), and entrepreneurial government (Osborne and Gaebler, 1992). NMP reforms were implemented in the United Kingdom and New Zealand in the 9th and 10th decade of the 20th century in Germany, France, the Netherlands, Scandinavian countries, Switzerland, Central and Eastern European countries. It opposes Taylor's scientific management and Weberian theory based on the assumption that bureaucratic organisations implement the government functions the best. The major abstracted components of NMP include explicit standards and measures of performance, greater emphasis on output control, private sector management manner, and parsimony in allocating resources (Hood, 1991).

NPG is an evolutionary doctrine that followed NPM and need to be examined with regard to UBC governance. Focusing on accountability, public interest and value, interdependence, social responsibility, trust, citizen participation NPG is firmly rooted in

organizational sociology and network theory. T. Bovaird understands public governance "as the ways in which stakeholders interact with each other in order to influence the outcomes of public services" (Bovaird, 2007, p. 220). R.B. Denhardt and J.V. Denhardt promote public service as serving citizens rather than steering them. They give priority to democracy, citizenship, and service for the sake of public interest. They also suggest that public governance should begin with the recognition that an engaged and enlightened citizenship is crucial to democratic governance (Denhardt and Denhardt, 2000). All those perspectives share a common approach that public service is a central role attributed to greater citizen participation, co-production and public service delivery by the third sector or non-governmental sector. Furthermore, three approaches to the public sector - traditional public administration, NPG, and networked governance – were also identified and analysed under NPG phenomenon (Hartley, 2005). Networks, partnerships, trust, social exchange, stakeholder involvement and civil leadership are the main players in the paradigm of networked governance. In addition, NPG assumed a multiple stakeholder scenario whereas collective problems can no longer be solved only by public authorities but require the cooperation of other players (citizens, business, non-governmental, volunteering-based organisations, media, etc.) in which practices such as mediation, arbitration and self-regulation may be more effective than public action (Bovaird & Loffler, 2002 as cited by Loffler, 2009). Moreover, under NPG, the importance of both formal (constitutions, laws, regulations) and informal rules (codes of ethics, customs, and traditions) are recognized under the assumption that negotiation between stakeholders can alter the importance of these rules in specific situations. Furthermore, NPG suggests that governance does not reason only in terms of the logical ends and means, inputs and outputs, but also recognizes the importance and value of the key processes of social interaction such as integrity, inclusion, transparency, etc.

The historical development or evolution of public policy framework has undergone 3 major stages in the 20th and 21st century. According to D. Osborne, public administration and management have gone through three dominant stages: longer preeminent on of Public Administration until the late 1970s; the second mode of NPM, until the start of the twenty-first century; and the emergent one of NPG (Osborne and Gaebler, 1992). D. Osborne viewed NMP as a transitory stage in the evolution toward NPG (Osborne and Brown, 2005). In the first part of the 20th century the major public policy framework, developed under scientific or Taylor's approach, was the public administration which was characterized by rigid formal rules and regulations. The dominating approach was bureaucracy, the state as the major social organization and the main concept of the state was the welfare state. The dominating innovation pattern was linear, usually top-down, in the case of UBC is was based university to business approach. The last couple of decades of the 20th century witnessed the emergence of NMP as dominating public policy framework with management being the main approach. The major social organization was the market with the dominating concept of the state being minimized state, emphasizing cutting down unnecessary state functions and enhancing deregulation, effectiveness, and efficiency. The integrative mechanism of cooperation between public organisations was based on contract-based relations. The innovation paradigm was two-directional, based on the partnership approach. Finally, the beginning of the 21st century has witnessed the

emergence, spread and evolution of NMG with governance being the major approach to public policy. The dominating social organization has become networks and the concept of the state has evolved to empowering state. The integrative mechanism has become the trust-based social exchange. The dominating UBC and innovation paradigm has become holistic, interactive and based on social networks. The evolutionary approach to public policy development and its major characteristics are depicted in Table 1.

Table 1. The evolutionary approach to public policy development

Indicators / time period	1930–1980	1980–2000	2000–2015
Public UBC policy framework	Public administration	New Public Management	New Public Governance
Approach to UBC	Bureaucracy	Management	Governance
Social UBC organization	State	Market	Networks
The concept of the state	Strong state	Minimal state	Empowering state
Mechanism of UBC	Formal rules	Contract-based	Social exchange
Functions of the state	Regulation	Deregulation	Cooperation
Public values	Stability	Flexibility	Risk-taking
UBC relations	Linear	Two directional	Holistic, interactive, multidirectional

Source: developed by the author according to Osborne, S.P., Brown, K. (2005); Keast et al, 2007; Leichteris, 2011.

In addition, the forces affecting the public governance reforms need to be analysed. Ch. Pollitt and Bouckaert suggest to explore the reforms of public governance from three major perspectives: socio-economic forces, political system, and administrative system. They form the understanding of the societal elite what management ideas are desired and how reforms are being implemented. The socio-economic forces include global economic forces, social and demographic transformations, and national directions of socio-economic policy. The political system perspective includes new governance ideas, citizen pressure and party political ideas. The major constituencies of the administrative system include the content reform programme, the process of implementation and implemented reforms (Pollitt and Bouckaert, 2003). The model of public governance reforms is presented in Figure 2.

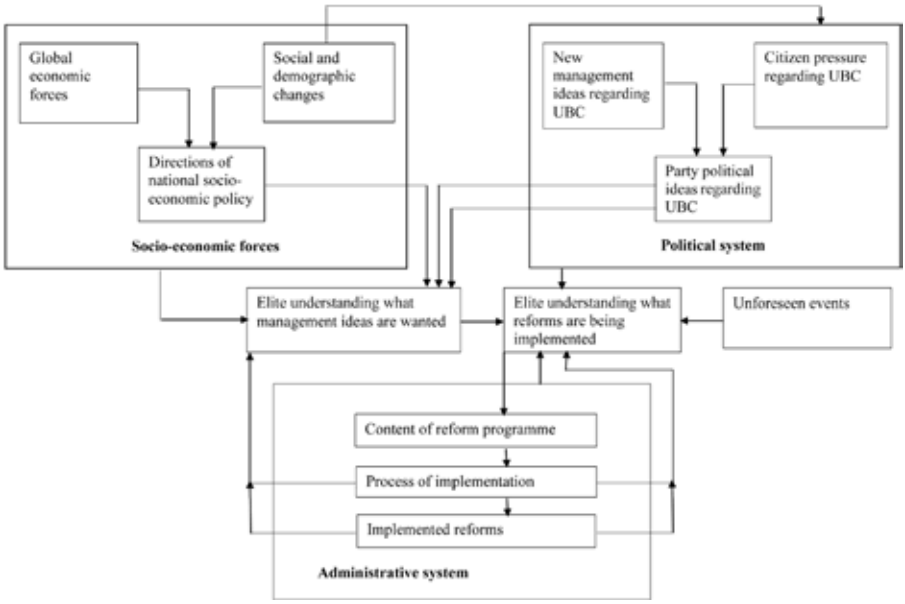


Figure 2. The major system of public governance
(*Source*: developed by the author according to Pollitt and Bouckaert, 2003, p. 43).

1.2. Public university governance at the crossroad of shifting approaches: from Conventional or Mode 1 to Corporative or Mode 2 approach

Following the expansion of NPM and NPG doctrines and their acceptance by the society, during the last two decades public university governance globally has appeared at the crossroad of shifting approaches. In order to understand the driving forces behind modern public university governance, two approaches behind their mission and value system – Conventional or Mode 1 and Corporative or Mode 2 will be examined following the article published by the author of this dissertation (Gudelienė, 2013).

The Conventional or Mode 1 refers to the traditional, "older" approach to university governance while Corporative or Mode 2 means the modern, "new" approach to university governance. It also means the movement from a "science as resource" to "science as engine" model of socio-economic and regional development (Berman, 2012, p. 2). Conventional or Mode 1 and Corporative or Mode 2 approaches do not necessarily contradict but supplement each other (Jacob, 2000; Gulbrandsen and Smeby, 2005), work simultaneously and interchangeably nowadays as successful universities manage to balance academic excellence with entrepreneurship (Godin and Gingras, 2000). However, for the sake of clarity, the approaches will be divided and analysed separately.

Conventional or Mode 1 approach refers to the traditional way of university governance that has a tradition of several centuries. Under this approach university's

mission was twofold – providing education and research. For centuries, higher education institutions were focused on elite education and fundamental research that was traditionally carried out within disciplinary boundaries. In addition, universities as autonomous institutions were managed by vertical or hierarchical management model, usually having a rector and the senate at the top of the hierarchical pyramid. Both governing bodies were elected from the prominent and leading professorship by the academic community. Smaller governance units – faculties or departments – also had their leadership that was elected by the academic community or appointed by the university leadership. Universities operated as autonomous institutions being accountable for their activities only to academic community or state institutions that were directly liable for higher education. They were completely funded from the national budget on the grounds of basic funding usually according to the research outcome of the previous years. Cooperation with external partners, including business or public governance, was not a necessity. Therefore, the concepts of UBC, the entrepreneurial university or engagement of stakeholders or external partners were not even found in academic discourse (Gudelienė, 2013).

In the beginning of the 21st century the dynamics have changed and the Corporative or Mode 2 approach to university mission and value system has emerged. Under Corporative or Mode 2 approach university mission has become economic and societal (Gibbs, 2011), aimed to lead innovation by generating and disseminating knowledge – providing education, research, and outreach to society (Gasset, 2009). University mission has "expanded from educating the elite for positions of community leadership to providing the primary vehicle for economic and social mobility to all strata of society" (Bess and Dee, 2008). Thus, Corporative or Mode 2 approach to university mission and value system refers to a market-oriented model of university governance, influenced by NPM and NPG, which focuses on mass education, developing student skills and competences necessary for being employed at the market, focusing on applied rather than fundamental, interdisciplinary rather than disciplinary research. The borderline between basic research, considered a realm of universities, and applied research, seen a realm of business, is becoming increasingly blurred.

In addition, under Corporative or Mode 2 approach public universities are being managed to make the profit from education and research as from any other business. During the last couple of decades, the funding schemes from the national budget have changed. While previously universities have received all funding from the national budget on the basis of the results of the previous years, recently the funding system has changed from basic funding to quasi-basic funding and introduction of competitive funding. It means that a part of national funds are allocated to universities on the grounds of basic funding and a part of it universities have to fund-raise from external sources. Therefore, universities have to shift their behaviour and engage in national or international projects or contracted research. Following the Corporative or Mode 2 approach paradigm, the concept of the entrepreneurial university, a market university, or academic entrepreneurship has received much of scientific attention during the last decade (Rothaermel et al., 2007; O'Shea et al., 2008; Gudelienė, 2013).

Moreover, the concept of the third university mission – engagement in, outreach and service to society – has emerged under Corporative or Mode 2 approach. As a result,

cooperation with external partners and having close and functioning relations with private and public sectors (Etzkowitz and Leydesdorff, 2000) has become the prerequisite of entrepreneurial university. Nowadays universities are induced to respond to the variety of surrounding forces. "External constituencies (e.g. state governments, parents, funding agencies) provide resources for higher education and also set formal and informal expectations of institutional outputs (e.g. values, skills, and competencies in graduating students and new knowledge) that can be used in social, commercial and aesthetic ventures" (McNabb, 2009, p. 291). Modern public universities are now considered as agents of societal change and must use their vast intellectual and financial resources to confront global challenges such as climate change or reduction of poverty (Thorp and Goldstein, 2010), global political economy and regional economic development (Bramwell and Wolfe, 2008). The concept of the third university mission has been analysed from value system (Hunsaker, 2010), strategic management (Worth, 2002), or the role of university leadership perspectives (Rhodes, 1997).

Furthermore, university governance manner has also changed during the last couple of decades making academic life conform to management laws (Kim, 2008) and universities having become more like a place of businessmen than of academia (Currie and Vidovich, 2000). Modern universities are led not by the most prominent professors as it used to be for centuries but by managers. Efficient resource allocation, marketing, and branding are other concepts often met in an academic discourse today. For example, "business practices of cutting production costs, abandoning courses and programmes not in demand, offering more popular programmes and facilities and advertising to increase brand image, sales and the profit margins: a business language and culture unfamiliar in higher education twenty years ago" (Young, 2002 cited in Hemsley-Brown, 2011, p. 121).

The shift from Conventional or Mode 1 to Corporative or Mode 2 approach impacts organizational cultures and climate within universities which are noteworthy to examine in the context of public university and UBC governance. The concept of organizational culture in this context refers to "the patterns of learned beliefs, values, and behaviour that are distinctive to each individual organization. Culture has also been defined as a system of shared values that are exhibited through the organisations' different cultural artifacts (Peters and Waterman, 1982). Culture can also be understood as the shared beliefs, values and assumptions of a specific group or organization" (McNabb, 2009, p. 135). Organizational culture can also refer to the internal organizational climate which is made of usual employee way of communication including traditions, dominating habits, and organizational image (Gražulis et al., 2012). Six different, yet interrelated, modern university organizational cultures were identified in the research literature: collegial, managerial, developmental, advocacy, virtual and tangible (Bergquist and Pawlak, 2007). Organizational culture impacts the quality of service that university provides (Kaziliūnas, 2004), the efficiency of structure and processes within universities and UBC ecosystem, etc.

Following the evolution of NPM and NPG and the shift from Conventional or Mode 1 to Corporative or Mode 2 approach to modern public university governance, it is important to examine the cultures and characteristics of the university as public service delivery unit. D. Osborne and T. Gaebler identified the following cultures and categories of government under NMP and NPG doctrines: catalytic government, community-owned government, competitive government, mission-driven government, result-oriented

government, customer-driven, enterprising government, decentralized government (Osborne and Gaebler, 1992). D. McNabb adds the characteristic of cooperative government (McNabb, 2009). As public universities are the focus of this dissertation, the same categories of cultures and characteristics acquired due to the evolution of NPM and NMG and the shift from the Conventional or Mode 1 to Corporative or Mode 2 can be extended to public university governance that has a direct impact on its relation to the phenomenon of UBC. Thus, following D. Osborne and T. Gaelber and D. McNabb under NPM and NMG, public universities are gaining the following characteristics: catalytic university, cooperative, community-owned university, competitive university, mission-driven university, result-oriented university, customer-driven university, enterprising university.

Serving as catalytic public bodies, universities take the role of uniting all stakeholders of innovation and UBC ecosystem. They can provide the neutral ground where different members of the society meet, the platform for public debate and research-based solutions to societal challenges. In addition, through R&DI processes universities develop and transfer knowledge to the public. With regard to educational processes, universities are the 'grand central' and can serve as catalysers of societal education, development of cooperative and entrepreneurial culture and competencies needed to satisfy the need and expectations of different societal groups. Furthermore, by enhancing mass education and emphasizing the skills necessary to be employed in the market, public universities take the catalytic role aimed to the transform the landscape of cognitive, socioeconomic, regional development of the society.

Cooperative public university refers to the expanding scope of cooperation with different stakeholders. S. Puškorius suggests that the major principle of efficient cooperation is that partners understand completely their interests and know that they will be compensated if they implement their functions qualitatively and timely (Puškorius, 2006). D. McNabb suggests that "organizational cooperation can be established through several different means, including collusion, overlapping fields of operations, and dependence on the expertise available only in other organization's specialization (Bozeman and Straussman, 1991)" (McNabb, 2009, p. 194). Although seldom can any public organization including university function without interaction with other organisations, in the past this interaction was sometimes coercive or made by the imperative of the law, regulations or standards. Traditionally public governance operated by the top-down or donor-recipient governance strategy emphasizing higher-level control over subordinates' activities (McNabb, 2009). The donor-recipient strategy "presupposes the existence of a mutually dependent relationship among the various intergovernmental and private enterprise actors functioning cooperatively, but still working towards accomplishing the objectives of the superior organization" (McNabb, 2009, p. 195). Today, new cooperative governance models including network management are replacing the traditional top-down or donor-recipient models. Network management model presents a new distribution of power and responsibility. D. McNabb suggests four cooperative governance models including 1. Project and/or programme partnering, 2. Cooperation between government agencies and private organisations, 3. Cooperation between government agencies at different levels and 4. Outsourcing of delivery of government services to private companies (McNabb, 2009).

Adapted to university as public service delivery organization, graphical representation of Corporative or Mode 2 university governance models is shown in Figure 3.

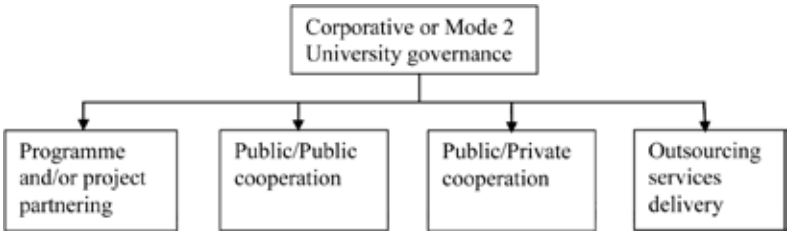


Figure 3. Cooperative university governance models
(*Source*: developed by the author according to McNabb, 2009, p. 197)

Community-owned public university (Osborne and Gaebler, 1992) refers to the involvement of all community stakeholders into university governance processes. The involvement of business and societal leaders in university councils can serve as an example of community ownership. Another example can be involving business partners in developing study programmes, providing internships and cross-sectorial mobility opportunities for students and researchers. Community-owned public university approach can be examined from the perspective of participation based public governance model developed by B. Mikulskienė. It is based on mutual social understanding and comprehensive expression of participant interests encouraging changes in public policy. The major elements of participation based university governance model are the following: suitable space of interest expression, the totality of interests, the combination of interests, research-based proofs, monitoring of participatory quality (Mikulskienė, 2013).

Competitive-government approach to public university governance refers to the market–based orientation and injection of competition into public service delivery systems (Osborne and Gaebler, 1992) including enrolment of students and receiving project or contracted R&DI grants. To remain competitive universities have to introduce performance measurement and evaluation. Moreover, the universities are expelled to competitive environment not even in the boundaries of the academic realm but they also compete with other market players including consulting companies, think-tanks, and knowledge-based business companies globally. To remain competitive on the global arena university governance has to think primarily of how to increase the quality of studies, research and innovation generation and transfer processes. It means refocus on the university mission, which under Corporative or Mode 2 approach is threefold: education, research, and service to society. The focus on the mission in a competitive environment means minimizing procedures and maximizing efficiency and effectiveness (Osborne and Gaebler, 1992). Noteworthy to mention that although efficiency is considered the core of organizational management theories, is widely discussed and sought in all management areas it is almost impossible to unify it. Therefore, efficiency of measurement can be defined only in the context of a specific organization within a specific period of time (Sudnickas, 2008). In practical terms, it means the introduction of business management manner and focusing a public university on strategic priorities, efficient allocation and management of

human, financial, material and other resources and cutting down processes and structures that do not generate added value. In essence, all these processes refer to profit making and managerial approach to 'doing more for less'. In addition, to be competitive on the global market, reputation, visibility and positive image in the society, or in marketing terms, branding, becomes an important element of public university governance.

Result-oriented government approach (Osborn and Gaebler, 1992) translated to public university governance means strategic resource allocation to achieve the final result. Therefore, public university governance has to focus on orienting an organization and financing outcome instead of input which is challenging with regard to innovation outcome. Study processes are also targeted to the achievement of results which are difficult to measure with regard to knowledge acquisition, generation, and future impact.

Customer-driven NMP and NPG approach defined by D. Osborne and T. Gaebler translated to public university governance means that universities have to meet the needs and expectations of their service end-users (students, business companies, public governance, and other stakeholders). As a result, study programmes have to be oriented to satisfy the ultimate student needs to provide them with skills necessary to be employed in the market. In addition, the study programmes and R&DI have to reflect the current and future needs of the market including private and public sector. They also have to reflect the needs and expectations of state institutions that provide funding for educational and R&DI processes. It suggests that educational and R&DI outcome has to be in line with national and international R&DI priorities.

Enterprising government NMP and NPG approach as suggested by D. Osborne and T. Gaebler refers to earning more than spending, the phenomenon familiar to market mentality. Translated to public university governance, it means that university governance has to think creatively, seize the opportunities provided by the market (both private and public sector), focus on income generation and making the profit from all assets and delivered services, manage resources effectively and efficiently. In practical terms, the concepts of the cost-effectiveness of study programmes and R&DI processes, contracting out services that are not directly related to university mission (e.g. catering, housing, etc.) come into the academic discourse which was not the case under Conventional or Mode 1 approach.

Decentralized university approach means that public governance moves from vertical or hierarchical to horizontal or network management (Osborne and Gaebler, 1992). With regard to university and UBC governance, it means that the decision-making processes are not concentrated in the hands of top-down management, which in public university terms means the rector, senate, deans and heads of departments but responsibility is shared horizontally. University governance is responsible for making strategic decisions on the basis of involving the academic and the neighbouring community.

In addition, governance has never been a static principle (McNabb, 2009) and the development of NPM and NPG has caused complex governance system. "Hybrid system of governance that incorporates the best administration and management practices from both the public and private sectors" are emerging (McNabb, 2009, p. 191). NMP and NPG also suggest alternative or hybrid service delivery mechanisms, including quasi-markets with public and private service providers. Under NMP and NPG paradigms universities as well as other public governance institutions, "are being pushed to move away from

Industrial Age bureaucratic thinking and become like the business they are supposed to serve, regulate and/or augment" (McNabb, 2009, p. 10). In addition, McNabb suggests that modern public organisations face the challenge of "the pressure to downsize, reorganize and reinvent, do more with less, deliver new and expanding services with declining resources and integrating and new technologies and management structures" (McNabb, 2009, p. 11). As a result, public sector officials including university governance "are finding ways to form and structure a new governance model, one that includes cooperative arrangements and networks, virtual organisations, and public-public, public and non-profit, and public-private sector collaborative networks" (McNabb, 2009, p. 13). Nowadays public university governance has to make "an alternative choice between novelty and one or more values – stability, continuity, predictability, and trust" (Pollitt and Bouckaert, 2003, p. 36).

The concept of Public and Private Partnership (PPP) as a form of NPM or NPG is also noteworthy to explore in the context of UBC and public university governance. PPP is a recent development in public governance and can be defined as "strategic alliances between public, private and non-profit sector entities in which risk is shared and power between the partnering entities is relatively distributed in nature" (Koliba et al, 2011, p. 154). The PPP concept emerged in city infrastructure development in the United States of America and the United Kingdom in the 1980s and later was transferred to the area of public service deliverance. PPP is one of the solutionsto the decreasing trust in the public sector and increasing trust in the private sector that is observed in many modern societies (Dalton, 2005). PPP is the foundation of the dynamics and harmony of society as the principle of partnership enables to use unique competences and resources of public and private sectors to find balanced solutions to the existing societal problems (Gudelis and Guogis, 2011; Gudelis and Rozenbergaitė, 2004). It refers to an endeavour between a public and private sectors whereas a private sector venture provides a public service (OECD 2008). J.F.M. Koppenjen defines PPP as the partnership between public and private sectors during which products or services are developed and risk, cost, and resources, related to these activities, are shared (Raipa et al., 2012). PPP can take a form of a project, an agreement or a joint institution developed by partners. Three types of PPP concept can be distinguished: social partnership, local partnership and institutional partnership (Raipa et al., 2012). Social partnership is understood as the interaction and cooperation between state institutions, employers and employees in different areas of social life including economics, politics, education, territorial development, etc. Local partnership refers to the formal organizational structure that mobilizes different interest groups aiming at social inclusion on the regional level. Institutional partnership in this context can be twofold: public sector partnership and public-private partnership. The essence of PPP is the deliverance of public services by the private sector that was traditionally delivered by the public sector (OECD 2008; Raipa et al., 2012). The major drivers of PPP include the possibility of the public sector to use the expertise of the private sector in delivering certain services that traditionally are carried out by the public sector as well as financing the delivery of public sector services without incurring any borrowing. PPP can be examined by emphasizing its objectives and take the following forms: as management reform, problem transfer, risk transfer, public sector restructuring and sharing governance (OECD 2008; Raipa et al., 2012).

PPP is widely used in practice. For example, in 2009–2012 the European Commission

encouraged PPP under the 7th Framework Programme leveraging public and private investments in such initiatives as "Factories of the future, to promote competitiveness and sustainability of the European manufacturing industry; Energy-efficient buildings to promote green technologies and the development of energy efficient systems and materials in new and renovated buildings to radically reduce their energy consumption and CO2 emissions; Green cars to improve the sustainability of all European road transport and accelerate the move towards electrification of road and urban transport" (European Commission, Research and Innovation, 2014, p. 32).

UBC can be applied through PPP as a management reform. It can enable university and UBC managers to reform public university sector by transforming public university major functions according to market mechanisms. By cooperating with the business, public university governance can learn the principles of the market, become more entrepreneurial and better adapt to competitive conditions (Raipa et al., 2012). From UBC governance perspective PPP can be also viewed as problem transfer from public to private sector. It can be understood as a universal measure to solve the problems of delivering public service – education and research. PPP can transfer the solution of university governance problems to the private sector, i.e. to commercialize them. The major objective of university governance becomes not reforming itself but encouraging others to find a solution through market mechanisms (Raipa et al., 2012). In addition, PPP in UBC governance context may also mean risk transfer. In the situation of financial limitations, PPP becomes a means to solve university financial problems under which the financial burden of a university is transferred to public investors. By contracting out university governance transfers the financial risk of public service (education, research, premises maintenance) to business (OECD 2008; Raipa et al. 2012). Finally, PPP in UBC governance situation may also lead to the phenomenon of shared governance. PPP corrects university relations in three ways: the values of trust and cooperation transforms opposition between the university and business realms, leads to sharing experience, risk, and responsibility, and allows both parties to reach consensus in implementing complex solutions.

The major models of PPP include contracting, franchise, concession, joint venturing, and strategic partnership. Under contracting private organization delivers the service and state organization, in our case public university, pays to the private organization. University decides what kind of services should be delivered, established service standards and carries out control. The success of contracting highly depends on such competences as negotiation, agreement management, conflict resolution, etc. (Raipa et al., 2012). The examples of UBC governance under contracting includes the establishment of research and education infrastructure, acquisition of library resources, employment, service outsourcing, etc.

Franchising in UBC governance context refers to transfer of monopoly rights regarding concrete service to the private company. Under franchising model, private investor can develop public university infrastructure the ownership of which can be transferred to a private company after a certain time. The right of franchising is usually granted on the basis of competition to a business company that has offered the best bid. With regard to UBC governance franchising can be used in developing catering services at universities, building or reconstruction of dormitories or sports facilities, etc. (Raipa et al., 2012).

Concession model is understood as a special permit to carry out economic activities related to development and maintenance of university infrastructure, services, management

of the asset. Under concession contract, private company takes certain rights, risks and responsibilities (South et al., 2015). In the context of UBC governance, concession can be applied with regard to development of research and educational infrastructure and additional services to university end-users. Examples of such activities can be the daily-care centre for the children of students, staff and the neighbouring community at the university premises, development of university laboratories, sports and catering facilities, etc.

Another model of PPP applicable to UBC governance can be joint venturing. It refers to the establishment of a joint venture between a public university and a private sector organization aiming to implement joint projects. A joint venture can be managed under partnership agreement (Raipa et al., 2012). An example of joint venturing can be a joint company between a university and business in a certain thematic area aimed at acquisition European Union research grants under Horizon 2020.

Strategic partnership as a model of PPP can also be used in the public university and UBC governance. Under it, public university and business organization can join their forces for a common activity. The strategic partnership permits sharing risk and benefits between partners as well as carrying out independent activities. The examples of strategic partnerships can be joint publishing, joint events, student enrolment, and human resource management activities.

1.3. The models of knowledge creation: the Triple Helix model, the Quadruple Helix model and the Quintuple Helix model

UBC governance can be also explored in the context of the evolution of the knowledge creation models. The major models include the Triple Helix model, the Quadruple Helix model and the Quintuple Helix model. The development of the knowledge creation models is presented in Figure 4.

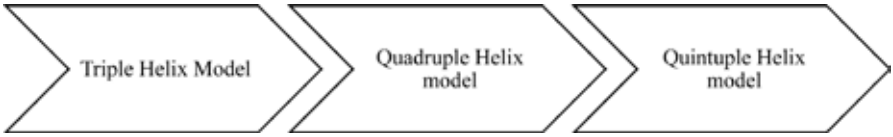


Figure 4. The evolution of the models of knowledge creation
(*Source*: developed by the author according to Carayannis et al. 2012)

The Triple Helix model presents a three-dimensional perspective of innovation and socio-economic development between the university, business and government. According to the model, innovation is developed and introduced into the market as a consequence of cooperation between universities, companies and government, each of which is one element of the helix (Gawel, 2014). The concept was formulated by H. Etzkowitz and L. Leydesdorff in the 1990s. Its essential element is the entrepreneurial university which is viewed as the driving force behind the move from industrial to the knowledge society. Approaches focusing on university emphasize changing norms and expectations with regard to university-based knowledge production that enhances economic development (Etzkowitz and Leydesdorff, 2000).

Over the last two decades, theoretical and empirical research on the Triple Helix model has grown extensively and is widely used in exploring R&D application and UBC governance. The Triple Helix Research Group at Stanford University suggest to view the scientific literature on the subject matter from two main complementary perspectives: "1) a (neo) institutional perspective which examines universities and UBC through national and regional case studies and comparative historical analyses. Various aspects of academic R&D commercialization and involvement in socio-economic development including UBC governance forms, knowledge and technology transfer and entrepreneurship, contribution to regional development and government policies, etc. 2) a (neo) evolutionary perspective which sees university, business and government as co-evolving sub-sets of social systems" (Stanford University Triple Helix Research Group, 2014). In addition, the Triple Helix Model looks at university, business and government networks and suggests that the knowledge level of a society depends on the interaction of these institutions (Surja and Mohammed, 2008). Thus, the country that encourages the cooperation between universities, business and the government gains a competitive advantage over others (Fernández López et al., 2014). The graphical representation of the Triple Helix Model configurations is depicted in Figure 5.

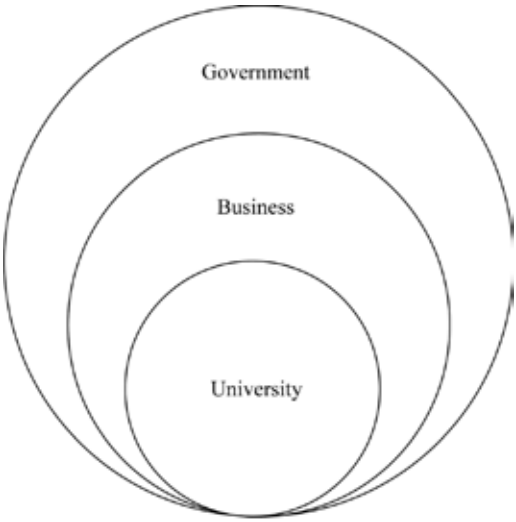


Figure 5. The system and sub-systems of Triple Helix Model
(*Source:* Carayannis et al., 2012)

The Quadruple Helix model was developed by adding a fourth element – general public – to the Triple Helix Model. It includes the three elements of the Triple Helix Model – government, university and business that operate in the realm of the general public which is also based on culture, media, and art. The Quadruple Helix adds the fourth element the 'media-based and culture-based public' and 'civil society' to the Triple Helix (Carayannis et al., 2012). The graphical configuration of the Quadruple Helix is depicted in Figure 6.

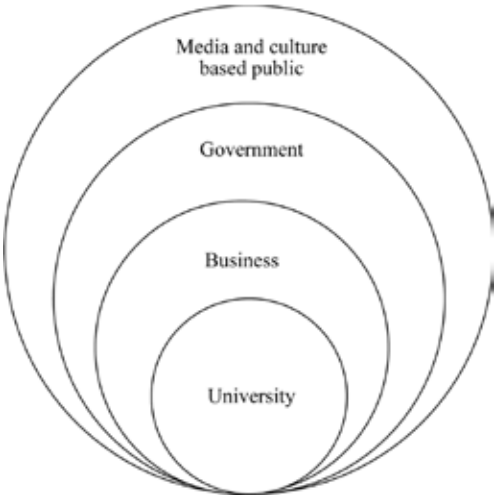


Figure 6. The system and sub-systems of Quadruple Helix Model
(*Source*: Carayannis et al., 2012)

The Quintuple Helix model is even broader and more comprehensive than the Quadruple Helix and adds the helix of the 'natural environments of society'. The Quintuple Helix stresses the necessary socioecological transition of society and economy in the twenty-first century; therefore, the Quintuple Helix is ecologically sensitive" (Carayannis et al. 2012). The system and subsystems of the Quintuple Helix including the elements of the Triple Helix model and Quadruple Helix model are presented in Figure 7.

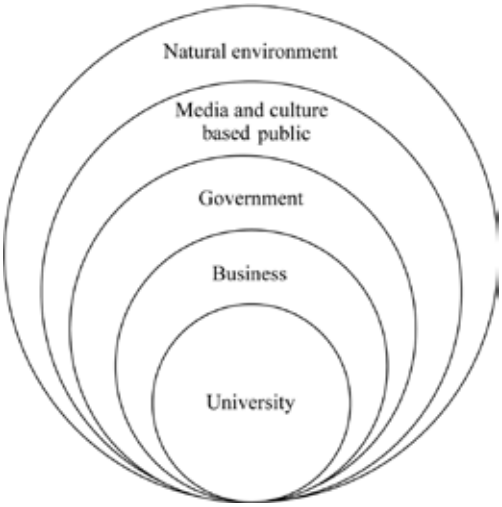


Figure 7. The system and subsystems of the Quintuple Helix model
(*Source*: Carayannis et al., 2012)

The models of knowledge creation help to understand the development of societal values and collective thinking about UBC. Under the Triple Helix the understanding of UBC was limited to three major actors – university, business and government. It reflected the societal needs, expectations and challenges of the time when UBC was used for development of new products, mostly technological. The approach developed from the post-war thinking and uniting three major actors to provide technological solutions to societal problems and help satisfy industrial needs. The Quadruple Helix model approach reflects the shift of societal thinking from satisfying industrial needs towards the expansion of democracy, the human rights and the increased importance of the welfare of individuals and societies. It shows the increased importance of media and culture in the thinking in satisfying societal needs and expectations. The development of the Quintuple Helix model approach indicates the shift in values and turning back to nature, coming back to ecology and healthy living as well as sustainable development. It shows the concern of the damage made by irresponsible and ineffective use of natural resources. Thus, the development of knowledge creation models with regard to UBC indicate the development of human thinking and values systems.

1.4. Theoretical construct of university and business cooperation governance: integrative approach to the Systems, Institutional and Stakeholders theories

The holistic, integrative and dynamic approach is the core of UBC governance research. The theoretical construct of UCB ecosystem management was designed by integrating the elements from Systems theory, Institutional and Stakeholder theories. The Systems theory was applied because it explained the UBC governance from systematic approach public university being a part of UBC ecosystem. The Institutional theory was chosen for the theoretical construct because it explained how organisations can increase their ability to grow and survive by becoming legitimate in the eyes of their stakeholders and adapting to them. Stakeholder theory was chosen for the theoretical construct as it suggested that stakeholder management plays an important role in business and university governance.

Systems theory was developed by biologist Ludvig von Bertalanffy in the 1940s but later spread to different disciplines. It refers to the interdisciplinary background that focuses on wholeness, integration, relationship, pattern, and organization (Molenaar et al., 2014; Niclas, 2013). It puts the framework for the question "how and why does this system as the whole function as it is?" (Patton, 2002, p. 119). From classical approach systems theory refers to the connectedness of two or more elements or players when one of them influences the behaviour of the other as well as the system as a whole, which is both greater than and different from its parts (Patton, 2002). Systems theory approach is inductive and explanatory, sensitive to the context and placing universities and business companies in the larger political, socio-economic, legal, cultural and sustainable development environment. It operates on such major terms as interaction, feedback, relationships, schemes, etc. Systems theory is applied when constructing complex phenomena, socio-economic systems, the development of structures, etc. In addition, the concept of systems thinking as a part of systems theory encompasses four interrelated dimensions: thinking in dynamic dimension (delays, stock vs flows, oscillations), modelling dimension (thinking in models or systems, qualitative

and quantitative modelling), feedback dimension (thinking in loops and networks and pragmatic dimension (systems management, planning of impact intensity, etc.) (Ossimitzis, 2000 as cited by Skaržauskienė, 2010). Systems theory and systems thinking approach have to be integrated into conceptual normative model of UBC governance.

UBC ecosystem governance is examined with regard to five components of systems theory including inputs, transformation process, outputs, feedback and the environment (Daft, 2003). Inputs refer to material, human, financial and information resources used to produce goods and services, and in UBC case – knowledge and/or technology. The transformation process means the change of inputs into outputs and, finally, outputs refer to employee satisfaction, profit/losses products and services or, in the case of UBC, knowledge and/or technology. Feedback refers to the awareness of the results that influence the selection of inputs for the next cycle of the process. The environment surrounding an organization includes political, social, economic, legal forces around UBC. The systems perspective of a university, business company or public governance is presented in Figure 8.

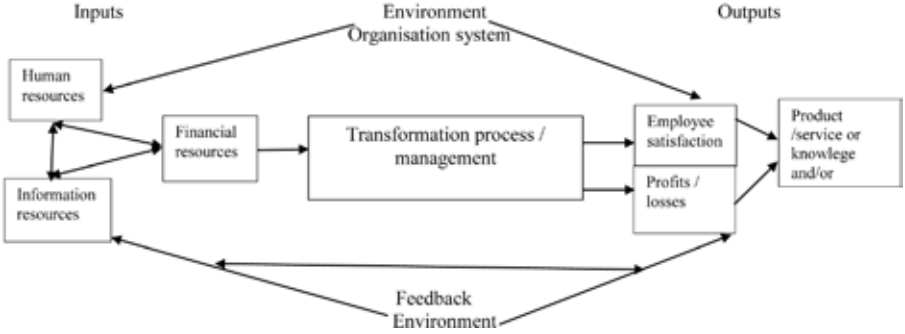


Figure 8. Systems perspective to UBC governance
(*Source*: developed by the author according to Daft 2003)

Under Conventional or Mode 1 approach universities operated as closed systems having no or little relations with external stakeholders. The shift from Conventional or Mode 1 approach to Corporative or Mode 2 approach has caused university governance to turn from closed to open systems recognizing that valuable ideas come from inside or outside of an organization (Chesbrough, 2003; van de Vrande et al., 2009 cited by Lopez et al., 2014) and that the cost of ignoring the environment is very high. To exist and prosper every system, including UBC ecosystem, needs to have fresh input from the environment. UBC ecosystem participants, universities, and business companies, thus, constantly have to monitor their environment, adjust to changes and bring in new inputs. Furthermore, UBC ecosystem governance has to take into account subsystems of UBC governance, i.e. parts of a system that depend on one another. Complex systems, as in the case of UBC, have numerous interacting elements or players, are dynamic, self-evolving and not linear (Price, 2004). As successful universities, business companies and UBC ecosystem operate as a coordinated whole, changes in one part of an ecosystem affect other parts. The success of a UBC ecosystem as knowledge and/or technology sharing network naturally leads to changes in organizational structure, cultural values, and work processes.

Institutional theory explores how organisations can increase their ability to grow and survive in the competitive environment by becoming legitimate in the eyes of their stakeholders and adapting to them. Institutional theory explores the processes by which certain structures become established as authoritative guidelines for social behaviour (Scott, 2004). It deals with three major subthemes: isomorphism examining homogeneity of organisations (Di Maggio and Powell, 1983), institutional logics analysing the way to understand stability and change (Reay and Hinings, 2009) and institutional work as a way to deal more deeply with the role of actors in attempting to create, maintain or change institutions.

Institutional theory contributes to the understanding of UBC governance from isomorphic, institutional logics, and institutional work perspectives. If universities or business operating are isomorphic, one well-worked cooperation strategy should be applicable in developing other cooperation cases. Institutional logics approach helps to explain how and why UBC ecosystem has changed during the last decade in Lithuania. Currently, the UBC ecosystem is affected by the UBC dynamics in the European Union and, as a consequence, the Lithuanian governmental initiatives to enhance UBC including the introduction of financial instruments and educative approach in the media. Di Maggio and Powell suggest that "strategies that are rational for individual organisations may not be rational if adopted by large numbers. Yet the very fact that they are normatively sanctioned increases the likelihood of their adoption. Thus, organisations may try to change constantly; but after a certain point in the structuration of an organizational field, the aggregate effect of individual change is to lessen to the extent of diversity within the field" (Di Maggio and P. J. Powell 1983, p. 149).

Furthermore, the social construction and competing institutional logics developed by Reay and Hinings can be transferred to UBC governance case. Competing institutional logics can be defined as "taken for granted rules guiding the behaviour of field-level actors and they refer to belief systems and related practices that predominate in an organizational field" (Reay and Hinings, 2009, p. 34). The Lithuanian university and business governance mentality inherited from the Soviet times can explain the current UBC situation. For example, the market-based business phenomenon was absent and cooperation with entrepreneurial people was considered disgraceful in the Soviet system. Bureaucratic, hierarchical and linear university governance approach that existed for several decades hinders the establishment and development of UBC network, especially in the areas that don't have cooperation traditions. In addition, the attitude that universities and business are two separate worlds makes it difficult to go into cooperation and move university governance from the Conventional or Mode 1 approach to the Corporate or Mode 2 approach. Furthermore, the shift of university financing mechanisms from total funding from the state budget to partial and, thus, making universities fundraise from different sources cause the different distribution of power between universities and the state (Currie and Vidovich, 2000). In addition, the move from professorial to managerial university leadership can serve as another example of competing institutional logics that affect the functions and culture of universities (Kim, 2008).

Institutional work perspective refers to the role of actors in attempting to create, maintain or change institutions. In Lithuanian UBC ecosystem, it means different players including university leadership, business management, public governance institutions, associations and individual ecosystem participants and their efforts to promote UBC,

develop financial mechanisms to enhance UBC, carry out educational efforts and develop skills and competencies to engage in UBC. In addition, institutional work perspective includes the development of mentality and organizational culture at universities and business companies that lead to UBC, creating legal systems, motivational schemes, and structures to encourage participation in UBC.

Stakeholder theory dealing primarily with the involvement of stakeholders, "how business actually does and can work" (Freeman et al., 2010, p. 3) as well as morals and values into management process can be also applied in developing UBC governance models. It was originally created by Edward Freeman in the book *Strategic Management: A Stakeholder Approach*. Stakeholder theory is built on the idea that business success or failure highly depends on individuals and organisations that take part in business processes (Freeman et al., 2010). It deals with organizational constituencies or stakeholders and dependence on them for success. The theory raises the questions who are these stakeholders and how should they be managed? (Freeman et al, 2010).

The theory identifies and models stakeholders of an organization, describes methods by which UBC ecosystem governance can give due regard to the interests of those groups. Stakeholder theory suggests the conceptual models used to understand business. The main problems Stakeholder theory can solve are the following: "(i) the problem of value creation and trade; (ii) the problem of the ethics of capitalism; and (iii) the problem of the managerial mindset" (Freeman et al, 2010, p. 2). Stakeholder theory implied that the interests of stakeholders are common and to create value, it is important to be aware of how value is created for every stakeholder. It means that each stakeholder is influenced by the action of other stakeholders (Freeman et al., 2010). Stakeholder system is presented in Figure 9.

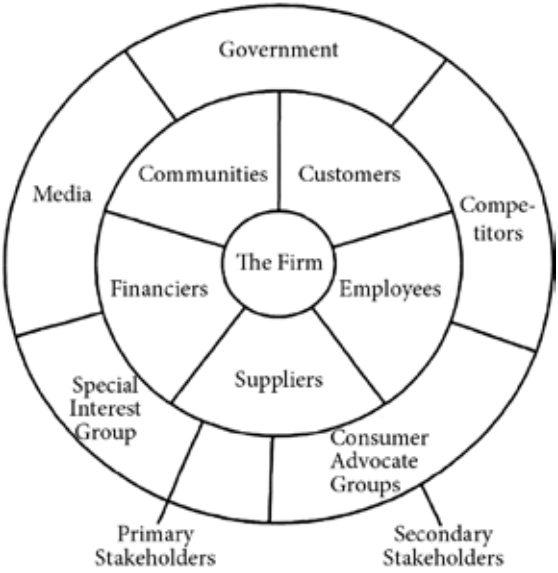


Figure 9. Stakeholder system of a company
(*Source*: Freeman et al., 2007, p. 3).

Although E. Freeman did not define universities as stakeholders of a business company, it can be suggested that they can be attached to the communities' area as presented in Figure 10. Therefore, business success also depends on UBC. In addition, the university side stakeholder system was developed by the author. It also includes primary (students, employees, market, financiers, and secondary school system) and secondary stakeholders (government, competitors, communities, special interests groups, media, etc.). The primary and secondary stakeholders are interconnected and have mutual interactions.

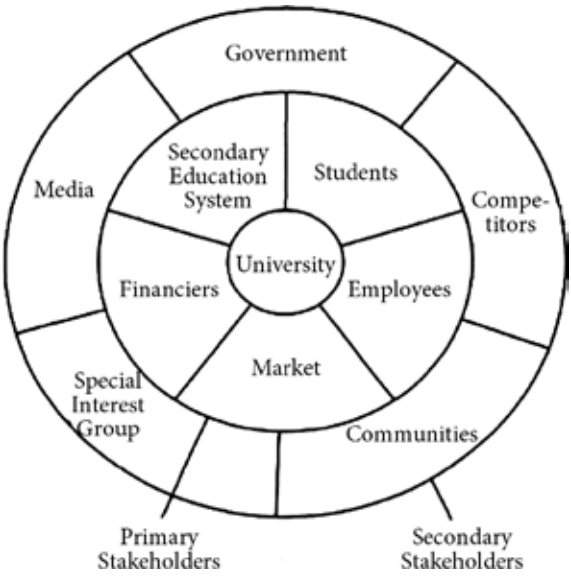


Figure 10. Stakeholder of a university
(*Source*: developed by the authoraccording to Freeman et al., 2007)

In addition, the Stakeholder theory plays an important role in UBC governance research by providing a unique set of moral philosophy. For instance, the principle of stakeholder fairness suggests that managers should have financial as well as moral obligations to stakeholders the content of which are developed by a particular business organization and its stakeholders. The principle of stakeholder fairness causes the implications for stakeholder obligations including social corporate responsibility (Phillips, 2003). In addition, stakeholder theory builds on the assumption that business organisations are indeed, among the most powerful social institutions that fuel free-market economy, control vast resources and affect every human life (Phillips, 2003). This assumption is the driving force behind UBC ecosystem management modelling.

Summary and discussion

To sum it up, Part 1 provided a theoretical framework for analysing UBC governance. It explored the influence of major managerial doctrines on UBC governance including

NPM and NPG. Such characteristics of NPM and NPG introduction of the market-oriented culture dominated by major principles of economy, efficiency and effectiveness, explicit standards and measures of performance, greater emphasis on output control, private sector management manner, and parsimony in allocating resources. NPG introduced the principles of accountability, public interest and value, interdependence, social responsibility, and citizen participation in public governance, including the services delivered by public universities.

In addition, the shift from Conventional or Mode 1 to Corporative or Mode 2 approach was explored. Following the expansion of NPM and NPG doctrines, public universities have appeared at the crossroad of shifting approaches behind their management. Conventional or Mode 1 approach referring to the traditional way of university governance with university mission of providing education and research. Under Corporative or Mode 2 approach university mission has become to lead innovation by generating and disseminating knowledge – providing education, research and outreach to society. Universities focus on developing student skills and competencies that are necessary for being employed at the market, focusing on applied rather than fundamental, interdisciplinary rather than disciplinary research. Following D. Osborne and T. Gaebler public universities have acquired such characteristics as catalytic, community-owned, competitive, mission-driven, result-oriented, customer-driven, enterprising, decentralized, cooperative universities.

In addition, the development of knowledge creation models from the Triple Helix through the Quadruple Helix to the Quintuple Helix model was examined. The Triple Helix model refers to a three-dimensional perspective of innovation and socio-economic development between the university, business and government. The Quadruple Helix modelincludes the three elements of the Triple Helix Model government, university and business that operate in the realm of the general public which is also based on culture, media, and art.The Quintuple Helix modeladds the helix of the natural environments of society.

Furthermore, Part 1 examined the integrative approach of Systems, Institutional and Stakeholder theories with regard to UBC. Systems theory brings the framework of wholeness, integration, relationship, pattern, feedback and organization to UBC ecosystem management. Universities and business are interrelated and influence each other's behaviour and relationships. Systems theory places UBC in the broader political, socio-economic, legal, cultural and sustainable development environment. The open versus closed, dynamic versus static, multidirectional versus linear systems approach to explain the UBC ecosystem and its processes. UBC ecosystem processed were examined with regard to Institutional theory which explored the processes by which structures become authoritative guidelines for social behaviour and three major subthemes: isomorphism, institutional logics and institutional. The Stakeholder theory helps to solve the problem of value creation, the ethics and the managerial mindset. It implies that to create value it is important to be aware on how value is created for every stakeholder and that stakeholders of a university and business company are interconnected.

2. CURRENT TRENDS OF UNIVERSITY AND BUSINESS COOPERATION GOVERNANCE

The concept of cooperation is the essence of UBC governance and is noteworthy to explore in the context of this dissertation. It has different connotations and meanings and has been the subject of research in many disciplines. The concept is at the core of social sciences and has been examined the most in socio-economic research (Axelrod and Dawkins, 1984). In the broadest sense cooperation refers the synergetic interaction and the activity performed by the interaction of two or more parties aiming to achieve a common objective for a mutual benefit (Axelrod and Dawkins, 1984; Fitzek and Katz, 2006). The concept of cooperation is also tightly linked to the concept of communication. Cooperation, indeed, is impossible without communication. The concept of "cooperation implies the interaction and negotiating procedures between entities needed to establish and maintain interoperation" (Fitzek and Katz, 2006, p. 49). In the context of UBC governance, communication is the prerequisite before cooperation. Therefore, management has to develop structures for people from university and business to communicate first and only after that cooperation can start.

Furthermore, cooperation has been examined from the perspective of volunteer or unforced cooperation. The concept of the human action developed by Liudvig von Mises in the treatise on laissez-faire explains that economy is based on volunteer cooperation but the mutual benefits prompted from egoistic and individualistic aspirations is an important element (Murphy, 2015). There is an age-old question whether unforced cooperation is ever possible and how cooperation can emerge in a world of self-seeking egoists (Axelrod and Dawkins, 1984). In other words, people go into cooperation caused by the desire to gain benefit what they do not have and might have as a result of cooperation. Benefits might be of different origin – financial reward, satisfaction, philanthropic aspirations, etc.

In addition, cooperation also refers to the collaborative use of resources aimed to enhance the joint activities. It means that efficient and effective use of tangible and intangible resources is the deep expectation people have when going into cooperation. The concept also refers to sharing the resources which is particularly relevant in the case of UBC. For cooperation to happen it is expected that universities and business would share their infrastructure, financial and human resources, know-how, time, etc.

Finding and maintaining cooperative partners is the primary motivation of participation in networks. Cooperation also can be understood as the process of establishing and maintaining a network of collaborating partners (Fitzek and Katz, 2006). Therefore, as UBC is based on cooperation, the role of the public governance is to facilitate the establishment of formal and informal networks which attract university and business sector employees. For the networks to operate successfully their leaders have to think primarily about the events that open up a space for communication, sharing of ideas, building trust and commitment, having a mutual benefit of cooperation. Thus, to have a critical mass of UBC cases, it is very important to promote networking and establishment of communities where universities and business participate.

Recent research on UBC governance takes the following perspectives: network management (NM), knowledge management (KM) and innovation management (IM)

perspective. The characteristics and major peculiarities of network management (NM) from socio-economic perspective were examined in the works of H. Etzkowitz, L. Leydesdorff, M. P. Feldman, P. Desrochers, D. Scott, M. E. Newman, R. Agranoff, G. Ahuja, P. Boragatti, M. W. Cohen, etc. Network management perspective presents UBC ecosystem management from individual researcher's (Etzkowitz and Leydesdorff, 1997; Feldman and Desrochers, 2003; van Rijnsoever et al., 2008), university or business company (Santoro and Chkrabarti, 2002; Giuliani and Arza, 2009; Knoben, 2008; Berman, 2012), or public governance point of view (Barzelay, 1992; Agranoff and McGuire, 2003; Sorensen and Torfing, 2007; Boardman, 2008; McNabb, 2009; Koliba et al., 2011). Knowledge management perspective presents knowledge generation, accumulation, transfer, application, and measurement processes as a consequence of UBC.

2.1. Network management perspective

Today network management (NM) has become the major discourse in attempts to capture new patterns of UBC governance. It refers to a complex process that requires the ability to combine different interests and attitudes as well as understanding that network is necessary and may be beneficial to all its participants (Puškorius, 2006). Networks help to integrate diverse competencies, skills and technologies (Mancinelli and Mazzanti, 2008). Frequent references to social networks, professional networks, cross-border networks, innovation networks, e-networks, and university and business networks indicate their increasing importance in value creation. The growing use of networks brings value to the development and communication of organizational knowledge and practices (Czinkota and Pinkwart, 2012).

To gain conceptual precision NM can be defined as the pattern of direct and indirect ties between actors (Hoang and Ancontic, 2003; Guan and Zhao, 2013). In addition, NM refers to "a relatively stable horizontal articulation of 1) interdependent but operationally autonomous actors 2) who interact through negotiations which take place within a regulative, normative, cognitive and imaginary framework 3) that is self-regulating within limits 4) set by external agencies; and 5) which contributes to the production of public discourse" (Sorensen and Torfing, 2007, p. 98). Furthermore, NM can be also understood as a form of steering aimed at stimulating joint problem solving or policy development. NM can be also seen as "promoting the mutual adjustment of the behaviour of actors with diverse objectives and ambitions with regard to tackling problems within a given framework of inter-organizational relationships" (Kickert and Koppenjan, 1999, p. 43–44). In addition, NM could also refer to mobilization for collective action and multilateral cooperation. NM usually comprises three elements: intervention in an existing pattern of relations, consensus building and joint problem solving (O'Toole et al., 2004).

Network management perspective differs from hierarchical or "classical" management perspective in the following ways: organizational setting, goal structure, role of manager, management tasks, and management activities (Kickert et al., 1997). The comparative analysis of the hierarchical and network management perspective is presented in Table 2.

Table 2. Hierarchical and network perspective on UBC governance

Perspective / dimensions	Hierarchical perspective on UBC governance	Network perspective on UBC governance
Organizational setting	Single authority structure	Divided authority structure
Goal structure	Activities are guided by clear goals and well-defined problems	Activities are guided by various and changing definitions of problems and goals
Management role	Systems controller	Mediator, process manager, network builder
Management tasks	Planning and guiding organizational processes	Guiding interactions and providing opportunities
Management activities	Planning, design and leading	Selecting actors and resources, influencing network conditions, and handling complexity

Source: developed by the author according to Kickert et al., 1997.

The major characteristics of UBC network governance include introduction and development of new ideas, products or services, the emergence of new players and preserving the exclusion of the old ones, furthering a common language, enhancing reflection and feedback, etc. (Gudelis, 2012). Before entering into UBC networks, university and business management has to answer to themselves: How can businesses and universities best organize themselves in order to benefit from each other's resources? Do they present mechanisms for priority setting, decision-making and funding in the university sector help or hinder business-university cooperation? What changes might encourage collaboration? (Cameron and Wallace, 2007).

The major pre-conditions for UBC network management include the number and diversity of participants, costs of network management, political and social context, leadership and commitment power, skills and qualifications. Each network has its specific culture which is based on values, norms, customs, rules and participants. Networks can be categorised into two systemic groups: "the soft (social capital: trust, organizational culture, communication, direct personal contacts, networks, organization's size, structure, competences, experience and motivation) and the hard (institutional factors, geographical proximity and legal aspects)" (Bersėnaitė et al., 2012, p. 157).

Various typologies of inter-organizational networks could be applied to the study of UBC governance. G. Agranoff identified four types of networks: informational, developmental, outreach, and action networks (Agranoff, 2007). Informational networks refer to networks where partners come together to exchange policies, programmes, technologies and potential solutions while taking action is left up to partners. Developmental networks are aimed to increase their member capacities by combining the exchange of information, education and member service. Outreach networks are built for the purposes of exchanging information, technologies and resources, pooling of client contacts, joint planning, and enhancing access opportunities. Action networks enable their members to

make inter-organizational adjustments, formally adopt collaborative courses of action and deliver services along with exchanges of information and technologies (Agranoff, 2007).

Three forms of NM can be distinguished: self-governed or participant-governed network, management by a lead organization, management by a network administrative organization. In self-governed networks authority and power are distributed across the network. Each organization maintains social ties with other network participants. The dominant relational ties in self-governed networks are horizontal, those networks depend on the involvement and commitment of all, or at least, a significant subset of participating organisations (Provan & Kenis, 2007, p. 234; Koliba, Meek and Zia, 2011, p. 138). Self-governed networks could be formed by either two organisations (one company and one university) or several organisations (business companies or universities). K.G. Provan and P. Kenis suggest that self-governed networks are more effective when their size is limited, network members share a high level of trust and high consensus around network goals.

Lead organization networks concentrate authority and power in one organization. In lead organization networks, all major network-level activities and key decisions are coordinated through and by a single participating member acting as a lead organization (Provan and Kenis, 2007, p. 235; Koliba, Meek and Zia, 2011, p. 138). In the context of UBC, the role of a lead organization could be taken either by a business company, a university or a public governance organisation while other network partners being either universities or business companies. In the cases where government agencies take part in UBC networks, they could also take a role of lead organisations.

Network administrative organisations are coordinated bodies existing to administer the activities of inter-organizational networks. Such organisations may exist formally as distinct network actors, o informally as steering committees or governing boards. Unlike lead organisations, network administrative organisations are not members of the network themselves but are established for the exclusive purpose of network governance (Provan & Kenis, 2007, p. 236; Koliba, Meek and Zia, 2011, p. 139). "Network administrative organisations are more effective network structures when the networks consist of many actors and there is high consensus on goals" (Provan and Kenis, 2007, p. 237). In the Lithuanian UBC context, the Forum for Knowledge Economy, an association consisting of fifty-four members (legal and natural persons) from business, academy and public governance could serve as an example of a network administrative organization. The abstracted forms of inter-organizational network management are presented in Table 3.

Table 3. Major forms of network governance

Forms of network governance	Types of university business partnerships
Self-governed network	One (U[1]) + one (B)
	One (U) + several (B)
	Several (U) + one (B)
	Several (U) + several (B)

1 U – university, B – business, L – lead organizations, AO – administrative organization

Lead organization	One (U-L) + one (B)
	One (U) + one (B-L)
	One (U-L) + several (B)
	One (U-L) + many (B)
	Several (U) + one (B-L)
	Several (U) + several (B)
Network administrative organization	Several (U) + several (B) + one (AO)
	Several (U) + many (B) + one (AO)
	One (U) + many (B) + one (AO)
	Several (U)+one (B)+one (AO)
	One (U)+several (B)+one (AO)

Source: developed by the author.

NM is based on four major theoretical constructs. First, interdependency theory developed by Rhodes tends to view "networks as a mechanism for interest mediation between a number of autonomous, strategic actors who are mutually dependent on each other's resources (knowledge, innovative ideas, funding, formal authority, etc.) in order to govern and regulate a particular policy area" (Sorensen and Torfing, 2007, p. 98–99). A high degree of interdependence is linked to trust as it permits the mutual exchange of resources. Another theory examining networks is governability theory which defines networks as horizontal coordination between relatively autonomous actors (Sorensen and Torfing, 2007, p. 102). Both of these theories view networks as measures to achieve a certain outcome. There is a number of structural factors that can affect the success of network management including the types of organisations involved, the size of a network, its management, ability to achieve goals and objectives on a normative, strategic and operational level. Furthermore, functioning networks are best explained by evolutionary and social theories working together. Selection sometimes favours cooperative tendencies while institutions, norms, and incentives encourage and make possible actual cooperation (Cronk and Leech, 2012).

The central elements of functioning networks and prerequisite of UBC governance include interpersonal communication skills and relational factors such as trust, commitment, reciprocity, cooperation and agreement (Sorensen and Torfing, 2007). S. Goldsmith and W. Eggers suggest that other main competencies of NM include big picture thinking, coaching, mediation, negotiation, risk analysis, contract management, ability to tackle unconventional problems, strategic thinking, interpersonal communication, project and business management, team building (Goldsmith and Eggers, 2004). D. McNabb adds to the discussion by suggesting that cooperation between individuals or organisations in a network "can be attained in several different ways: by competition, by collusion, by overlapping fields of operations, and by dependence on the expertise available only in other organisations area of specialisation" (McNabb, 2009, p. 45).

In addition, the determining elements for the success or failure of cooperation in networks are the following: "(1) the initial disposition towards cooperation, which includes personal experiences of whom to trust and of the institutions safeguarding cooperative behaviour; (2) the extant issues and incentives, which imply benefits believed to be gained or lost by cooperation; (3) leadership can affect processes and outcomes in terms of legitimising actions and making people think of issues and incentives in particular ways; and (4) the number and variety of actors involved influences cooperation, which develops more easily if the number of participants is limited, the actors are similar and/or have personal ties, and the actors can reach and enforce agreements at reasonable cost" (McNabb, 2009, p. 130). Trust is usually built through earlier contacts and projects while commitment highly depends on intrinsic motivation which comes from employee feeling that their jobs are significant and that they are recognised for their achievements (McNabb, 2009). Moreover, previous research results indicate that personal friendships smooth the cooperation process by stipulating communication, trust and commitment (Faerman et al., 2001).

Achieving results from UBC networks is the primary UBC governance function. It requires a comprehensive framework that contains a set of strategies for addressing the following seven areas crucial to accountability: setting goals, aligning values, establishing trust, structuring incentives, measuring performance, sharing risk and managing change. The graphical representation of getting results from UBC networks is depicted in Figure 11.

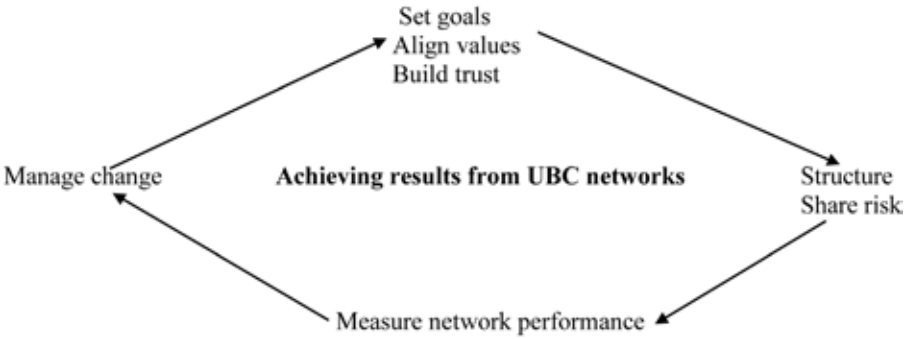


Figure 11. Achieving results from networks
(*Source*: developed by the author according to Goldsmith and Eggers, 2004).

The benefits of networks have also been examined by several researchers. It was found that cooperation in networks has a positive impact on innovation development on both universities and business companies (Becker and Dietz, 2004; Nieto and Santamaria, 2007; Zeng et al., 2010). The spectrum of different types of partners in collaborative networks has the greatest positive impact on innovation development and the degree of novelty (Nieto and Santamaria, 2007). Networks provide access to a variety of resources and speed up innovation processes and (Fukugawa, 2006).

Individual characteristics and organizational context play an important role in participation in networks. With regard to UBC, several categories of UBC determinants have

been examined: Individual researcher's intrinsic characteristics (Agrawal and Henderson, 2002; Bercovitz and Feldman, 2008; Giuliani et al., 2010) university (Friedman and Silberman, 2003; Di Gregorio and Shane, 2003; Landry et al., 2005) or business company features (Santoro and Chakrabarti, 2002; Schartinger et al., 2001; O'Shea et al., 2005; Lockett et al., 2003; Lockett and Wright, 2004; Landry et al., 2006).

UBC network individual level analysis

In order to understand UBC from NM perspective it is critically important to have a profound understanding and focus on of the involvement in UBC of a key actor – a university researcher (Jain et al., 2009; Agrawal and Henderson, 2002; Friedman and Silberman, 2003; Di Gregorio and Shane, 2003; Schartinger et al., 2001). As J. Bercovitz and M. Feldman has put it: "the main reason for focusing on university researchers and the factors influencing their interactions with industry is that we need to improve our understanding about *who* in academia interacts with industry, and *why"* (Bercovitz and Feldman 2008, p. 73). Research findings suggest several categories of factors influencing the probability of a university researcher to take part in UBC: demographic characteristics (e.g. gender, age), educational background (degree obtained, skills, capabilities, etc.), and position in the academic community (academic status, scientific output, experience, expertise, etc.), the size of academic network a researcher has, his/her disciplinary affiliation, etc.

With regard to demographic characteristics, several researchers have tested the relationships between gender variable and engagement in UBC. Some research findings suggest that males are more likely to engage in UBC and have higher external network activity than females (Azagra-Caro, 2007; Boardman, 2008; Giuliani et al., 2010; Goktepe-Hulten, 2010; Link et al., 2007). The reason behind it is related to the fact that males occupy more prominent positions than female and, thus, are in a better position to develop networks and consolidate partnerships (Gupta et al., 2005). Other researchers find that male researchers engage more in UBC but only in certain types of UBC such as formal, paid consultations, getting funding for joint research, etc. (Boardman and Ponomariov, 2009). Other empirical research findings do not reveal any significant impact of gender variable as the determining factor of engagement in UBC (Gulbrandsen and Smeby, 2005; van Rijnsoever et al., 2008).

Another important demographic characteristic is age though the debate over its impact is also inconclusive. Some research results indicate a positive relationship between seniority and engagement in UBC (Boardman and Ponomariov, 2009; Link et al., 2007), while others find a negative relationship (Bekkers and Bodas Freitas, 2008; D'Este and Patel, 2007) or no relationship at all (Boardman and Ponomariov, 2009; Gulbrandsen and Smeby, 2005; Renault, 2006). Age indicator can be also justified from the training point of view. Older researchers or business people who were trained under circumstances that UBC is not important, are less likely to engage in UBC (Bercovitz and Feldman, 2008) while younger generation researchers have been already trained in the context of UBC, have UBC mentality and may perceive engagement with business as leading better to their career progression and reputation (Bercovitz and Feldman, 2008; D'Este and Patel, 2007). Some research findings suggest that private companies approach younger researchers more often with the request for information (Boardman and Ponomariov,

2009). Other research results, however, indicate that younger researchers work more under pressure of establishing themselves in academia through publishing instead of networking with companies while senior researchers due to their age can build more on their networking experience with partners from industry (have co-authored papers, developed patents together, took part in collaborative projects, etc.). With regard to the relation between age and networking, empirical research findings reveal that the number of contacts and networking capabilities are increasing during the first twenty career years and later the level of network activities starts to decrease (van Rijnsoever, 2008).

Moreover, educational background is another important determinants of participation in UBC networks. The degree obtained, acquired skills and capabilities reveal researcher's cognitive background and forms his/her attitude on engagement in UBC (Klofsten and Jones-Evans, 2000). Although it is suggested that researchers with Ph.D. have more skills for cooperation with industry, the opposite argument is that they may be more involved in fundamental research and focused on publishing is also noteworthy (Klofsten and Jones-Evans, 2000).

Furthermore, the position in the academic community is also a significant determinant of engaging in UBC as it is gained by the accumulation of research outputs (publications), engagement in projects and ability to receive grants and, thus, mobilise research resources. Academic recognition and prestige traditionally are linked to publication quantity and quality. The relationship between engagement in UBC and publishing has been examined by several authors. Some research results reveal that researchers having industrial support are also more productive in terms of publishing (Agrawal and Henderson, 2002; Breschi et al., 2007; Fabrizio and Di Minin, 2008; Gulbrandsen and Smeby, 2005; Guliani et al., 2010). Publications also signal experience, visibility and prestige in academic community but they may also indicate negative effect in terms of networking in UBC (Lin and Bozeman, 2006). It is being argued that researchers who are involved in UBC have to write more reports and, consequently, have less time for writing publications (Jensen and Thursby, 2001; Giuliani et al., 2010; Landry et al., 2007). Moreover, researchers get recognition within scientific community from publications and not from engaging in UBC. Universities typically do not reward and promote researchers for activities such as commercialising R&D results, creating spin-offs or start-ups. Thus, researchers' performance evaluation systems act as barriers to UBC activities (Siegel et al., 2003b; Ndonzuau et al., 2002 as cited by Lockett and Wright, 2005).

Research findings also suggest that the higher academic position (professor, associate professor, senior researcher) the higher probability of his/her involvement in UBC. Networks are important resources of the academic career, they also grow naturally when academic rank increases (van Rijnsoever et al., 2008). It is substantiated by the fact that business companies tend to feel more confident when cooperating with researchers with higher academic position and well established scientific reputation (Giuliani et al. 2010; D'Este and Patel, 2007; Boardman and Ponomariov, 2009). However, some research findings suggest that academic status has an impact on UBC but only in certain types of cooperation, such for example, patenting (Guldbransen and Smeby, 2005).

Furthermore, academic status, experience and expertise indicate a proxy of the researcher's social connections with the academic community and signals prominence in a particular research area. It is being argued that the more central a researcher in her/his

national research system is, the more intense will be his/her connections with industry (Giuliani et al., 2010). Well-established researchers that have a wide network within the academic community and government, publish more and in high-quality journals, and have received government grants, also tend to be more engaged in UBC networks. In addition, research literature suggests that cooperation and networking within academia (faculty, department, and external researchers) have the largest impact on the academic career (van Rijnsoever et al., 2008). In addition, the quality of research is also determined by its level of participation in UBC (Mansfield and Lee, 1996; Tornquist and Kallsen, 1994 cited by D'Este and P. Patel, 2007). Thus, there is a direct correlation between the quality of research, networking and social return on investment in research (Martin and Scott, 2000; Siegel and Zervos, 2002).

The size of the academic network is the indicator of a researcher's ability to involve in UBC. The larger academic network a researcher has the more knowledge he/she accumulates, the more communication and networking skills he/she obtains. Therefore, it leads to higher probability of his/her participation in UBC (Lockett and Wright, 2005). The size of a researcher's network can be measured by social media tools such as LinkedIn, Research Gate, etc. Researcher's affiliation with special units within universities, faculties, departments, laboratories, research centres, positively influence participation in networks (Bozeman and Gaughan, 2007). Moreover, researchers are more likely to be entrepreneurial and engage in UBC if departmental colleagues are entrepreneurial (Bercovitz and Feldman, 2008). There is also empirical evidence that researchers having wide networks in the academic community also tend to have significant networking with business (van Rijnsoever et al., 2008).

In addition, the disciplinary affiliation of a researcher is also an important determinant of his/her participation in UBC networks. Researchers affiliated to applied fields of research such as technological sciences, engineering, life sciences engage more often in UBC (Bekkers and Bodas Freitas, 2008; Boardman, 2009). Furthermore, research fields also affect the type of UBC. For instance, patents and licencing, contracted research and student placement are the most important type in technological sciences (Bekkers and Bodas Freitas, 2008) while in social sciences knowledge is transferred mostly through inter-sectorial mobility of researchers and students (Louis et al., 2001).

Moreover, researchers' participation in UBC networks needs to be examined with regard to the shift from Conventional or Mode 1 to Corporative or Mode 2 approach to university governance. The shift requires the transformation of researchers' mentality, capabilities, and career trajectories. It means that the environment is changing researchers' mindset, cognitive and social-psychological processes and makes them acquiring new skills (Audretch and Erdem, 2004). How do researchers perceive the shift from Conventional or Mode 1 to Corporative or Mode 2 approach? How this perception impacts their professional self? How do they set and manage priorities in the context of the shifting landscape? Although there is little empirical research evidence on changing the personal identity of university researchers, it is suggested that they take a hybrid role identity that often includes a focal academic and secondary commercial self (Jain et al., 2009). Furthermore, shifting role identity from focal academic to academic-commercial self is related to satisfaction when research is put to test or good use in the society, personal contribution to societal welfare, economic gain.

In addition, funding plays an important role to UBC collaboration patterns, research performance, outputs, networking configurations, etc. Industry funding presupposes co-operation and constitutes an opportunity for UBC. Researchers having industrial funding tend to cooperate more inside and outside universities (Guldbrandsen and Smeby, 2005). In addition, there is a direct correlation between external funding and publishing capability of a researcher. Empirical research results suggest that researchers who had industrial funding publish more than their colleagues who have received no funding or other types of funding (Guldbransen and Smeby, 2005, Van Looy et al., 2004 as cited by Gulbrandsen and Smeby, 2005). Furthermore, there is empirical evidence that entrepreneurial behaviour has a tendency to be repeated. It means that if a researcher got involved in UBC once, it is likely that he/she will engage more than a researcher without entrepreneurial experience because participation in UBC generates a strong imprint (D'Este and Patel, 2007). It may be substantiated by the fact that success cases generate a positive self-esteem.

UBC network analysis from institutional perspective

Furthermore, to understand UBC from network management perspective it is important to analyse institutional level players – universities and business companies. As UBC governance deals with relations between different individuals and organisations, the concept of organization needs to be analysed in this context. M. Weber, one of the pioneers of research on organisations suggested to view them as a system of continuous purpose-directed activities (Weber cited by McNabb, 2009). M. Weber classified organization into three categories: bureaucratic, collegial and entrepreneurial. Bureaucratic organisations are characterized by rigid hierarchy and routine procedures aimed at stability and order. Collegial organisations refer to those in which decision making is based on consensus of its members. Entrepreneurial organizations mean learning organisations the major characteristics of which are flexibility, openness to innovation, and willingness to accept transformations (McNabb, 2009). Other researchers (Nadler, Hackman and Lawler (1979) defined organization as "social systems operating within larger environments, thereby continuing this tradition of looking at organisations as systems. Thus, organisations can be defined as a group of people, processes, and goals organized in a system and working to achieve a common goal or goals" (McNabb, 2009, p. 41).

Organizational management structure defines the totality of formal relations between employees in all organizational units aimed at common organizational goals (Gražulis, 2012). The notion of organizational governance has developed from linear and mechanical to "notion of the complex organism, and the latter – into the perception of the organization as socio-economic system" (Zakarevičius, 2003, p. 163), and later as socio-cultural systems. "If organisations are conceptualized as socio-cultural systems, their essence is defined by five reality aspects: processes, activity-function-functional positions, relational (connection) structure, morphology, functional position placement. This type of organization model is formed using the principles and possibilities of Systems theory" (Zakarevičius, et al. 2004, p. 475).

UBC network analysis from university perspective

Moreover, organisations and their involvement in the networks of value creation need to be examined from the ultimate mission point of view. Mission reflects organizational

identity which is the essence of its contribution to socio-economic or socio-cultural systems (Cardona and Rey, 2011). For centuries the mission of universities was two-fold: providing education and research. The concept of the third mission – outreach or service to society emerged at the end of 20th century. Although the scientific literature does not provide clear cut boundaries, the third mission means "all activities concerned with the generation, use, application and exploitation of knowledge and other university capabilities outside academic environments" (Molas-Gallart et al., 2002, p. 136). The ambiguity of the term and its different interpretation by different stakeholders makes it difficult to set up comprehensible indicators to measure third mission activities and outcome (Göransson et al., 2009). There are two major bodies of literature that address the nature of the third university mission. The first one refers to the Triple Helix Model and the second to university engagement (Gunasekara, 2004). The latter one can be defined as knowledge-related collaboration by academic researchers with non-academic organisations. These interactions include formal activities such as collaborative research, contract research, and consulting, as well as informal activities like providing ad hoc advice and networking with practitioners (Abreu et al. 2009; Bonaccorsi and Piccaluga, 1994; D'Este and Patel, 2007; Meyer-Krahmer and Schmoch, 1998; Perkmann and Walsh, 2008) (as cited by Perkmann et al., 2013). Following that, the third mission encompasses the engagement of researchers and higher education institutions in non-academic activities by fostering links with knowledge users and facilitating technology transfer (Gulbrandsen and Slipersæter, 2007; Perkmann et al., 2013). In addition, the third mission concept refers to the outreach to society aimed to provide social services without commercial gain; social services with commercial gain by exploiting university resources and research results through licensing, research and consultancy activities, and the generation of spin-off companies, university income generation through tuition fees, donations, projects, etc. (Molas-Gallart and Castro-Martinez, 2007). In addition, the third university mission leads to the entrepreneurial university model, the regional innovation systems concept, the engaged university model (Trippl et al., 2012) and the regional innovation system builder and contributor to social and economic development (Caniëls and van den Bosch, 2011, p. 272)" (as cited by Jaeger and Kopper, 2014).

Strategy is another most important element of an organization. Mission and strategy are related by cause and effect relationship because the organization implements its mission through a strategy (Cardona and Rey, 2011). Strategy refers to the holistic approach and concrete actions to be taken. Mission and strategy establish organizational identity, define its limits, and provide motivation and encouragement to stakeholders. Therefore, to function to its utmost, it is crucially important for the organization to define precisely its mission and strategy (Cardona and Rey, 2011).

The context of university including its history, tradition, disciplinary affiliation, management structure is also significant in the context of UBC governance (Boardman, 2009; O'Shea et al., 2005). Research findings reveal that the characteristics of the university, department, technology transfers system determine participation in UBC (Owen-Smith and Powell, 2001; Locket and Wright, 2005; Siegel et al., 2003). In addition, policies implementing UBC, the structure of knowledge and/or technology transfer office and the number of officers, the quality (DiGregorio and Shane, 2003; O'Shea et al., 2005) and quantity of inventions, the volume of research expenditure financed by external

sources (Di Gregorio and Shane, 2003; Lockett and Wright, 2005) are other institutional determinants of UBC.

The size of research staff of a department is considered as a prerequisite to attract industry funding. Research evidence suggests that small and large departments are more advantaged to medium-sized departments with regard to UBC (Schartinger et al., 2002). In addition, financing and income generation are other determinants of participation in UBC. Budgetary limitations make universities and their departments more open to UBC (D'Este and Fontata, 2007; Perkmann and Walsh, 2007). To brief, tendency to involve in UBC is determined by university or business company mission, strategy, the context it operates in, size, human and financial resources.

UBC network analysis from business perspective

Following Stakeholder theory approach it is suggested that business institutions have a different mission in the society. The primary mission of a business is profit generation and distribution. To generate profit business companies have to provide goods or services that satisfy customer needs and expectations and have a competitive advantage over its competitors. The concept of the Corporate Social Responsibility (CSR) is also noteworthy to mention with regard to UBC governance. It can be defined as "an ethical commitment to act in an economically and environmentally sustainable manner while taking into account the interests of all stakeholders" (Tari, 2011 cited by Gawel, 2014, p. 27). CSR has several dimensions including economic, ethical, philanthropic, environmental, etc.

Based on Stakeholders theory it is claimed that there are many reasons why companies cooperate with a range of partners, including universities. As cooperation means "working together to achieve a common goal" (Inzelt, 2004, p. 977), scientific literature suggests that most often business companies cooperate with universities for the following reasons: as sources of knowledge for innovation including access to expertise and talent, to address the lack of own technical staff, to improve access to funding, reduce costs and risks by co-financing research and using university infrastructure (Santoro and Cahkrabarti, 2002), solving business-specific problems (Bayona et al., 2002; Cohen et al., 2002; D'Este and Patel, 2008, Fontana et al., 2006), enhancing productivity and cross-fertilisation across disciplines, for obtaining prestige and visibility, and sometimes for leisure and fun (van Rijnsoever, 2008). Moreover, research evidence suggest that other determinants of business engagement in UBC include publications (Cohen et al., 2002; D'Este and Patel, 2007), consulting, participation in conferences and international cooperation networks (Bayona et al., 2002 cited by Lopez et al., 2014).

Business company strategy is also an important determinant of business engagement in UBC (Fritsch and Lukas, 2001; Eom and Lee, 2010). Research evidence suggest that business with investment strategy related to innovation are more likely to cooperate in R&D projects (Eom and Lee, 2010). Some scholars suggest that companies involved in product innovation tend to collaborate with universities more than those involved in process innovation (Eom and Lee, 2010). Furthermore, a business company size is an important factor determining its participation in UBC networks. Research evidence indicates that larger companies tend to engage in UBC more than small companies and it can be explained by the fact that larger companies have more financial and human

resources to engage in UBC (Fontana et al., 2006; Laursen and Salter, 2004 as cited by Lopez et al., 2014).

There is scientific evidence suggesting that most often business companies invest in applied research, student internships, university infrastructure (Adams, 2009) and rarely invest in basic research. Investment in basic research is an example of investment in 'public goods', usually,it ends up in scientific publications and becomes difficult to charge for inventions resulted from basic research. "There is no easy for-profit business model for capturing value from scientific discoveries in a world where science wants to be open and rapid dissemination of scientific knowledge through journals, conferences, and professional contacts is almost inevitable: not surprisingly, most basic research is not funded by business firms but by governments" (Teece, 2010, p. 185).

Following Stakeholders theory it can be claimed that although university and business traditionally operate under different presumptions, they share some common prerequisites. The major UBC prerequisites from both, university and business perspectives, are the following: effective employee relations, motivation, clear objectives, interdisciplinary and inter-sectorial groups based on professionalism and expertise, teams given freedom to act and take responsibility for their work results. In addition, research evidence suggests that competitive and authoritative leadership that ensures respect to employee efforts and mediation in conflict resolution, provides conditions to access information, facilitates intensive communication and knowledge sharing, are other prerequisites of successful UBC governance (Raišienė et al., 2014). These elements need to be taken into consideration when developing a conceptual normative UBC governance model.

UBC network analysis from public governance perspective

Public governance plays a critical role in facilitating UBC networks. Research evidence suggests that the country and its public governance factors affect a company's intention to cooperate with universities because public governance develops rules that either encourage or hinder UBC (Fernández López, 2014). Given the current legal, political and economic situation the most important challenge of the public governance institutions is UBC coordination and providing conditions for UBC (Block and Miller, 2008 as cited by Boardman, 2009).

UBC is more than ever at the heart of knowledge creation and play a crucial role in regional development and regional innovation systems (Godin and Gingras, 2000). Public governance is viewed as facilitators of regional development, engagement and innovation development (Chatterton and Goddard, 2000; Holland, 2001; Etzkowitz, 2002). Public governance shapes the design and structure of regional economies and innovation systems (Gunasekara, 2004). It is the prerogative of public governance to determine whether UBC plays an important role as regional innovation organizers, bringing together universities and business for cooperation (Etzkowitz, 2002). Therefore, the primary objective of public governance is to develop the legal, political and economic framework to enhance UBC.

Furthermore, the major function of the public governance is to ensure strategic priorities of a state. If UBC is included in national strategic and operational agendas, measures supporting UBC and funds are allocated to enhance UBC, it is the primary incentive for universities and business companies to cooperate. On the other hand, if

public governance does not show initiative in mobilizing resources for UBC, it will not happen or will be fragmented and based on individual level.

In addition, as the role of public governance is to measure the performance of public universities, it can be the major motivator for universities to engage or not to engage in UBC. For example, university performance indicators can be the number of contracts, the number of patents, the number of R&D products developed by universities and commercialised, funds raised from business companies, etc.

Public governance also plays a vital role in creating the business-friendly environment. It is the major determinant of the development of entrepreneurial culture and providing conditions to business companies to be greatest engines of economic development, major sources of monetary flows into the national budget, and satisfiers of public needs. The introduction of market principles, minimising taxes, decreasing bureaucracy are examples on how public governance can enhance the business-friendly environment and attract foreign investment. In addition, public governance plays a crucial role in directing student flows to certain educational areas by allocating national budget funding and forming public opinion via media. Public governance is also responsible for shaping national research priorities and allocating funding for research via basic or competitive research funding schemes. If collaborative projects are included in competitive funding schemes and UBC is the prerequisite of receiving project grants, it is the major measure to enhance real UBC.

2.2. Knowledge management perspective

Modern organizations can thrive in the new economy only if they are able to learn, understand, manage and develop new knowledge and innovation. Although P. Drucker developed the term 'knowledge work' in the second part of the 20th century but only in recent years managers genuinely recognised knowledge and innovation as an important resource that should be managed just as they manage human resources or cash flow. Defining knowledge is challenging as well as measuring and managing it. The concept of knowledge management has been examined under the conditions of neo-liberal reforms (Kim, 2008) or broader socio-economic system (Havas, 2008). Knowledge is related to experience and values, therefore thinking of knowledge in terms of certainty is misleading. Furthermore, for knowledge to be useful it has to be communicated and applied. The process of knowledge communication or transfer, thus, includes knowledge identification, encoding-decoding, dissemination, evaluation, implementation and securing (Probst, 1997).

Knowledge management also refers to "the efforts to systematically find, organise an make available a company's intellectual capital and foster a culture of continuous learning and knowledge sharing" (Daft, 2003, p. 59). In addition, it could be defined as "the facilitation of processes that create, sustain, apply, share and renew knowledge to enhance individual and organizational performance" (Daft, 2003, p. 331). D. McNabb suggests that knowledge management refers "to the process of gaining maximum benefit from the knowledge in an organization. It involves applying the knowledge that exists in an organization to find and apply innovative answers to old and new questions" (McNabb, 2009, p. 208). When developing knowledge management models, processes of knowledge production such as leadership, organizational culture, and values, learning, technology,

assessment need to be taken into account. Also, it is important to identify the gap between existing skills and capabilities and the required ones. UBC knowledge management conditions people from the university and business sides to learn. It means people will need to develop such skills as critical, analytical and reflective thinking to understand better different realms of university and business.

Developing knowledge management strategies in an organisation includes the processes of "1. Knowledge mapping of the organization, 2. Capturing both tacit and explicit knowledge, 3. Transferring or sharing for maximum returns, 4. Integrating knowledge-management processes and procedures into the culture of the organization, and 5. Classifying and storing or archiving the knowledge for future access and application" (McNabb, 2009, p. 213). Graphical representation of knowledge management strategies is depicted in Figure 12.

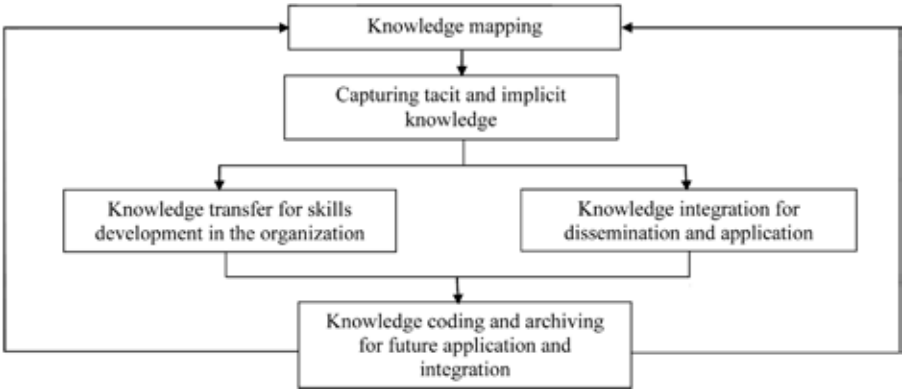


Figure 12. Fundamental processes of knowledge management
(*Source*: McNabb, 2009, p. 212).

Although information technology is very important in collecting and disseminating knowledge and information inside and outside an organization, knowledge management values include risk-taking, learning and cooperation. Instead of viewing employees as factors of production and looking for ways to use them for greatest efficiency, modern knowledge management is about people and their ability to think, create, share knowledge and build relationships (Daft, 2003). The major elements of knowledge management system include setting knowledge objectives, knowledge identification, acquisition, development, sharing and distribution, application, protection and measurement (Probst et al., 2006).

One of the major management tasks is to define objectives and provide a direction to the essential processes of an organization (Probst et al., 2006). Organizational knowledge acquisition and learning becomes meaningful only if concrete objectives are set on the normative, strategic and operational levels. The goal of the normative level is to develop the organizational culture that is knowledge acceptable. Strategic level knowledge goals include the development of experience patterns that will be useful in the future, the disclosure of the content of essential organizational knowledge and ensuring that organizational structures and management systems are in line. Finally, the major goals

of knowledge management at the operational level are the following: to ensure that knowledge management is implemented on the personal level, to translate normative and strategic level objectives into concrete and workable tasks, to optimise knowledge management infrastructure and ensure that interventions correspond the level they are supposed to (Probst et al., 2006). Table 4 represents knowledge management as related to setting knowledge objectives at different management levels.

Table 4. Setting knowledge objectives at different management levels

Normative management	**Organizational by-laws:** the influence of legal structures on knowledge management	**Organizational policy:** knowledge vision and mission, identification on determinant knowledge areas	**Organizational culture:** knowledge sharing, innovation spirit, intensive communication
Strategic management	**Organizational structures:** conferences, structure of accountability, organising R&D **Management systems:** EIS, Lotus Notes, etc.	**Programmes:** cooperation, development of essential competences presenting information	**Attitude towards problems:** orientation towards knowledge objectives identification of problem-oriented knowledge
Operational management	**Organizational processes:** control of knowledge management **Distribution processes:** knowledge infrastructure knowledge provision	**Tasks:** knowledge projects development of experts databases computer-based learning	**Effectiveness and cooperation:** knowledge sharing operating knowledge

Source: Probst et al 2006, p. 53.

Furthermore, two current trends in management science – the shift to a learning and technology-driven organization – have a particular impact on knowledge management with regard to UBC. A learning organization can be understood as one in which every person is involved in identifying and solving problems, enabling an organization to constantly experiment, change, and improve; thus, enhancing its capacity to grow, learn and fulfil its mission. The major principle of a learning organization is problem-solving which opposes the traditional organization aiming for efficiency. In addition, a learning organization is characterized by changes in all subsystems of an organization aimed to shift to a team-based structure, empower employees and share information at all levels horizontally and vertically. Self-directed teams based on efficient communication and cooperation are the building blocks of the learning organization structure. Team members

that have different skills, information, motivation and authority make decisions that are important to the team and respond creatively to the new challenges or opportunities. Employee empowerment is another element of a learning organization meaning that staff members have the power, freedom, resources, and information to make decisions. While under traditional management model these elements are limited, the major objective of a learning organization is to expand employee behaviour. Therefore, jobs have to be designed to meet higher-level needs by allowing staff to use their full potential. This approach helps to achieve the sense of employee ownership of organizational gains. Furthermore, based on Systems theory a learning organization is characterized by open system and information circulation within an organization. It is built on the approach that people need to understand the organization as a whole including budgeting, profits, expenses, external environment challenges, etc. Open information becomes extremely important in organisations that deal with ideas and concepts. The major management task, thus, is to encourage all people in the organization to share information with their peers.

When developing organizational competencies it is crucially important to evaluate the status quo of knowledge asset. The shift from the vertical hierarchy based management to horizontal or network management has made communication more open and flowing. Such methods as knowledge maps, topographic knowledge tables, knowledge asset maps, geo-informational systems, knowledge matrixes can be used in knowledge identification process (Probst et al., 2006). Nowadays the majority of organizational knowledge is acquired during different projects and success of project groups often determines the success of the entire organization (Probst et al., 2006). After the project is over, most often project team members take the knowledge gained during the project with them. Moreover, as projects are initiated under decentralised management model, they can duplicate each other or can be not related at all. As a solution to project related knowledge identification, a management tool as Rapid Response network developed by McKinsey can be applied. This tool secures project experience by developing automatic inquiry about 'a lesson learned', increases project transparency, minuses duplicating efforts, allows to access project team members and their experience, and encourages cooperation (Probst et al., 2006). Non-material and legally protected intellectual property rights gained from projects are most often secured in the form of patents, trademarks, licenses.

Furthermore, although it is difficult for organisations to achieve inner knowledge transparency, it is even more difficult to have access to external knowledge sources. The majority of staff don't have access to external knowledge sources or experts and are often overloaded with surplus of information accessible via the internet. Cooperation with university researchers is a helpful tool to check the tendencies, collect necessary information, have access to modern technologies and theories. External polycentric networks, defined by common member interests, personal approach, and volunteer participation is an additional expert and knowledge source search measure (Probst et al., 2006).

Knowledge process management also includes knowledge acquisition. Due to rapid knowledge growth and fragmentation organisations face a challenge of necessary knowledge acquisition. The major markets provide access to such sources of knowledge as external experts, shareholder knowledge, knowledge products, and knowledge gained by other organisations (Probst et al., 2006). Access to external experts can be based on employment, consultation services, strategic partnerships including product links aimed at minimising

cost and risk, shorten the time to enter to the market, control knowledge movement, and monitor or neutralise competition. A more advanced method related to UBC governance is knowledge links aimed at mutual learning and knowledge acquisition. External knowledge can be gained by managing stakeholder knowledge which includes university partnership knowledge, client knowledge, employee knowledge, policy-makers' knowledge, media and opinion makers' knowledge, public knowledge, financial market's knowledge, shareholders knowledge and suppliers' knowledge. The model of comprehensive organizational knowledge provided by stakeholders is provided in Figure 13.



Figure 13. Organizational knowledge elements
(*Source*: developed by the author according to Probst et al. 2006, p. 125)

Knowledge creation and development is an important part of knowledge management. It means the conscious creation of new competencies, products, and processes. As knowledge is not always the result of conscious efforts and can be the side effect of daily activities, it is important to understand the limits of competence development. Traditionally creation of new knowledge was considered a realm of a lab or R&D department but now new knowledge is being created at all organizational levels. The essential conditions of collective knowledge development include interaction, communication, transparency and integration (Probst et al., 2006).

Knowledge sharing and distribution is also a significant part of knowledge management as it contains determinant factors of competitiveness. Knowledge and /or technology transfer concept refers to the process by means of which technology and its associated knowledge, developed in a particular environment by a transfer agent (transferor university), are developed and applied to another context to support innovation processes, satisfying the requirements of the technology recipient (transferee company) (Probst et al., 2006, p. 631). University research-based knowledge provides many opportunities to develop new products or services or to improve the existing ones. There are many research publications on knowledge transfer from many perspectives

including the mechanisms of knowledge transfer and the units of analysis used to explain knowledge transfer (Landry et al., 2006). The major forms of knowledge transfer mechanisms include research publications, conferences, training and commercialisation of knowledge, which in its turn, cover consulting activities, research contracts with industry, patenting and spin-off formation (Landry et al., 2006). Interestingly, the immediate commercial outcome is usually not the primary motivator behind knowledge and/or technology transfer (Cohen et al., 2002; Schartinger et al., 2001). Consultations as the provision of a service by researchers to external organisations on commercial terms is another form of knowledge and /or technology transfer. They can include problem resolution, providing advice, generation of new ideas.

Due to networking environment knowledge and/or technology transfer, sharing and dissemination have become the prerequisite for effective and efficient knowledge management. It is meaningful only in the case of certain legal, economic and organizational limits. The major tasks of knowledge sharing and dissemination include knowledge copying that is fast transferred to a great number of employees, securing and sharing of lessons learned and synchronic exchange of knowledge and development of new knowledge simultaneously. The major obstacles to knowledge sharing and dissemination on the individual and organizational level are related to power and trust.

Furthermore, for knowledge to be useful it has to be applied. Knowledge application becomes more efficient when individual and collective work environment stimulating knowledge application is developed. The major determinant of knowledge and/or technology application is the distance knowledge terminals, such as universities, and the workplace of a practitioner. The physical distance between universities and business companies need to be taken into consideration when developing UBC structures as distance determines relationships, communication and knowledge exchange (Probst et al., 2006). The major obstacles of knowledge application include fear of disclosing weak places from university side and general distrust in external knowledge from business side (Probst et al., 2006).

Knowledge protection is also a part of knowledge management. Collective organizational memory is an important element of knowledge protection. It refers to the system of knowledge and competencies that secure and maintain understood and experienced things within an organizational in order to remember them in the future. Collective organizational memory and knowledge protection are the turning point in organizational learning because without memory it is impossible to learn anything (Probst et al., 2006). The major elements of knowledge protection include selection, accumulation, and renewal. The major tasks of knowledge selection include identification of the most important employees, lessons learned from successful cases and major reasons behind unsuccessful cases. Collective organizational knowledge needs to be highlighted in minutes from group discussions (Probst et al., 2006).

Finally, knowledge measurement is a necessary pre-condition aiming to evaluate efficiency of knowledge management. It indicates the appropriateness of knowledge objectives and success level of knowledge management. As it is difficult to measure knowledge as an object, it is suggested to use structural network, causal relations, and multi-dimensional knowledge measurement, knowledge objectives measurement based on normative, strategic and operational level objectives (Probst et al., 2006). Representation of relations between knowledge objectives and measurement on the normative, strategic and operational level is presented in Table 5.

Table 5. Relations between knowledge objectives and measurement

Levels	Knowledge objectives	Measurement
Normative level	To create conditions for knowledge oriented strategic and operational objectives To seek for the organizational culture that seeks to understand knowledge To seek the commitment of top leadership	Analysis of culture Observation of top leadership behaviour Analysis of trustworthiness (difference between status quo and ideal)
Strategic level	To identify the content of organizational essential knowledge To define desired competences To identify major competence development	Multi-dimensional knowledge measurement Measurement of current competences Control of major knowledge projects Balanced accounting
Operational level	To translate normative and strategic knowledge objectives into concrete deadlines To ensure that interventions correspond to the level they are implemented	Control of training with clear application of lessons learnt Measurement of system application Development of individual competence profiles

Source: Probst et al., 2006, p. 260.

2.3. Innovation management perspective

The concept of innovation management need to be examined with regard to UBC governance. J. A. Schumpeter defines innovation as "the new combination of factors of production made by the entrepreneur and an imperactive driving force for economic growth" (Haiyan and Yuan, 2009, p. 61). D. Osborne and K. Brown suggest that "innovation is a different process than invention and involves the implementation and / or adaptation of new knowledge. There are three different elements involved – the actors (innovators), the process (innovating) and the outcome (innovation). The core element that differentiates innovation from incremental change is the impact of discontinuity in the change process" (Osborne and Brown, 2005). Although there are numerous definitions of innovation, Osborne and Brown summarizes four major features of innovation including newness, relationship to the invention, being both a process and an outcome, change, and discontinuity. The authors of the report Universities and Innovation: the Challenge for Europe carried out by the League of European Research Universities (LERU) suggest to define innovation as "responding to market opportunities through organizational change and new ways of developing high-value products and services, demands that more effectively translate research excellence into commercial opportunities" (Universities and Innovation: the Challenge for Europe, 2006, p. 1). Furthermore, some authors refer to innovation as a process that is the outcome of interactions among different actors (Doloreux, 2004), which is an important factor when analysing UBC governance. Probst el

al distinguishes three major types of innovation: product innovation, process innovation and social innovation (Probst et al., 2006).

The nature of innovation and research on its historical development is also noteworthy to mention with regard to UBC governance. The early studies of innovation were economic concentrating on the role of innovation in macro-economic change and were developed by the founding fathers of market economies, such as for instance, A. Smith. In the 19th century, the concept was further developed by J. A. Schumpeter and N. Kondratiev. While J. A. Schumpeter drew links between the market and innovation emphasizing the role of the entrepreneur, N. Kondratiev linked innovation into the cyclical pattern of macro-economic growth and development, with each cycle linked to a key invention and its subsequent innovation. Later studies of innovation put an emphasis on its micro-economic implications and included sociological, psychological and political perspectives. Innovation has become a fundamental managerial issue in the works Kanter (1985), Drucker (1985), Peters (1988) and Adair (1990) (Osborne and Brown, 2005, p. 113).

Innovation classification is also important to mention in the context of this dissertation. Three basic typologies with regard to innovation origin, organizational impetus, and its user have been distinguished. First, "a typology of original impetus such *research push* (that is from the development of an innovation on the basis of research) or *market pull* (that is the development of innovation on the basis of marketing analysis" was used (Osborne and Brown, 2005, p. 113). Second, a typology on the origin of innovation on the organizational level was identified. "This approach derives from the early work of Cyert and March (1963). They argued that innovation can be classified either as *distress innovation* (arising because an unsuccessful organization needs to change to avoid distinction) or *slack innovation* (arising because an organization is successful, and so has sufficient surplus resources to carry the risks of innovation). The third approach to typology is based upon *the perceptions of beneficiaries or user of innovation*" (Osborne and Brown, 2005, p. 114). Rogers adds to the discussion by providing individual perception aspect. If an idea seems new to an individual, it is considered an innovation (Rogers, 2003).

Furthermore, successful innovation factors have been identified (Osborne and Brown, 2005). They include "relative advantage over previous modes of services, its compatibility with the existing service system and/or skill mix, its ease of comprehension by its end users, the extent to which it is possible to undertake trials prior to full adoption of the innovation and the observability of its impact(s) within a realistic timescale" (Osborne and Brown, 2005, p. 115).

There are many channels through which knowledge and/or technology transfer and innovation take place. Universities have multiple ways to contribute to innovation development. As Alfonso A. et al suggests "the most important way in which university can contribute to innovation and competitiveness is through training of professionals" (Alfonso et al., 2012, p. 3949). Furthermore, several researchers suggest that students are the most important form of knowledge transfer (Balconi and Laboranti, 2006). Through short-term assignments (internships, placements, part-timers) students can offer a great value in sorting out a company's commercial and technical challenges. Other channels of knowledge and technology transfer and innovation development include spin-offs (Friedman and Silberman, 2003; Ndonzuau et al., 2002), patenting (Landry et al., 2006; Wright et al., 2008; Thursby et al., 2007; Lissoni et al., 2008, Fabrizio and Di Minin, 2008),

licensing (Siegel et al., 2003b; Link et al., 2003; Jensen et al., 2003; Thursby and Kemp, 2002), contract research or joint research agreements (Schartinger et al., 2001), joint scientific publications (Friedman and Silberman, 2003; Thursby and Kemp, 2002; Hall et al., 2001; Calvert and Patel, 2003 cited by D'Este, P. Patel, 2007, p. 1295). It is suggested to group the major channels and types of knowledge and/or technology transfer via UBC into three major categories: development of UBC, inter-sectorial mobility and non-contract cooperation. Table 6 presents the major channels, types and examples of UBC governance.

Table 6. Major channels, types and examples of UBC governance

Channels	Types	Examples
Development of R&D	Collaboration in R&D	Joint R&D activities Contract research Consulting Joint publications Joint events Joint Ph. D. programmes
	Commercialization R&D results	Disclosures of inventions Patenting Licenses
Inter-sectorial mobility	Mobility of staff	Temporary or permanent movement of teaching staff and researchers from university to business and employees, managers and researchers from business to universities
	Mobility of students	Temporary or permanent movement of students from university to business
Non-contract cooperation	Curriculum development and delivery	Development of study programmes, guest lectures delivered by business people
	Lifelong learning	Providing permanent and/or continuing education services to business sector people at all stages of life
	Entrepreneurship	Creation of new ventures Developing entrepreneurial mindsets
	Governance	Business involving in university decision-making bodies (sitting on boards) Academic involvement in business decision-making bodies

Source: The State of European University-Business Cooperation, 2013.

The process of R&D based innovation development is also noteworthy to examine with regard to UBC governance. The major stages of innovation process include assessment of potential: internal and external market research (examining needs, desires, opportunities), planning the search process for R&D and potential system improvement (setting organizational priorities), undertaking projects in R&D and systems improvement (idea

exploration, knowledge development, knowledge capturing), implementing "newness" to products and services (measuring improved external satisfaction), sharing lessons learned throughout the organization or UBC ecosystem (improving internal processes), looking for opportunities for continuous improvement (sustaining competitive position, stakeholder satisfaction, survival and profitability) (White and Bruton, 2007). Figure 14 presents the graphical representation of the continuous process of innovation development.

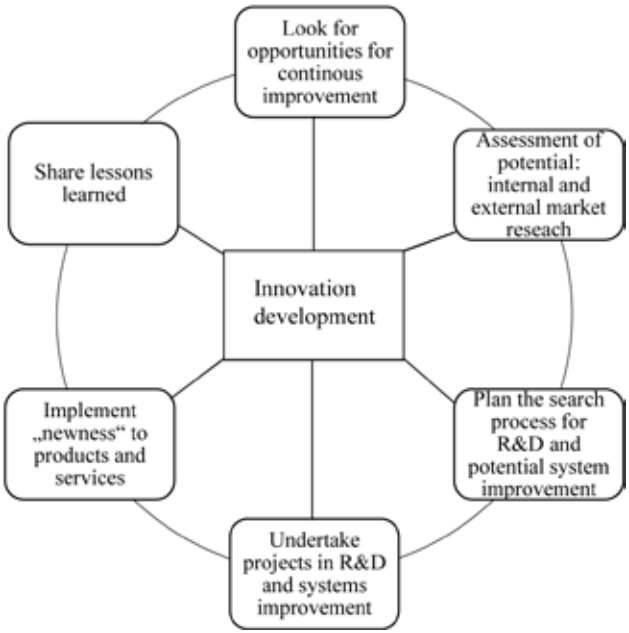


Figure 14. Continuous process of innovation development
(*Source*: developed by the author according to White and Bruton, 2007)

Universities can develop innovation through R&D and knowledge and/or technology transfer. It is important for universities to approach the innovation processes strategically by developing an understanding of the needs of local industries, critically evaluating their own strengths in satisfying the needs and expectation of local industries, and finding a fit between them. UBC can help business companies to develop new products and/or services as innovation is related to a company's ability to absorb external knowledge and information.

In addition, based on Systems theory there are many interconnected elements and participants influencing innovation management (on normative, strategic and operational level). They include engineering activities, product and operations procedures, socio-technical systems design, group and team behaviour, manager's experience and organizational history, decision-making processes, management techniques, financial systems, etc. The major elements and players influencing UBC and innovation management are presented in Figure 15.



Figure 15. Areas influencing UBC and innovation management
(*Source*: developed by the author according to White and Bruton, 2007).

Furthermore, the scientific literature suggests that during the last couple of decades there has been a fundamental change in the way business innovates. For instance, many large companies have moved away from undertaking their own research but instead scan the global research effort, much in universities, to gain access to the best relevant research (Universities and Innovation: the Challenge for Europe, 2006). The use of external networks has also increased (Hagedoorn, 2002). As business companies highly rely on external innovation sources such as new ideas emerging from networking individuals and resources flowing in and out of the organization (Zeng and Xie, 2010), inter-organizational and inter-sectorial networks have become a key strategy of many business companies (Dewick and Miozzo, 2004). Business companies take a more active part in different networks because they serve as "a complementary response to insecurity arising from development and use of new technologies while reducing uncertainties in innovation" (Diez, 2002, p. 68). Due to the expansion of network governance, the form of innovation development process has also changed during recent years. The traditional linear innovation process is being changed by the multidirectional process that involves multiple actors (Chesbrough, 2003; Evangelista, 2000; Tether, 2005), management of complexity has become the specific challenge of innovation-driven companies (Tschirky and Trauffler, 2011).

2.4. The process of knowledge and innovation transfer via university and business cooperation

Several empirical research has examined the process of knowledge and innovation transfer by focusing on different aspects of this process. Research results indicate that

knowledge and innovation transfer process requires communication of skilled personnel, adequate resource allocation, and incentive structures within an organization (Rogers et al., 2001). The success of knowledge and innovation transfer process depends on such factors as the competencies of the knowledge and/or technology transfer officers and "decentralized management style" (Siegel et al., 2003a), mutual understanding between the parties, the extent to which they share similar knowledge, frequency and quality of interactions (Cummings and Teng, 2003).

Knowledge and innovation transfer effectiveness has been examined from the individual and institutional point of view with regard to licencing and development of new business. From the individual perspective, core competencies, experience, attitude and motivation play the vital role. The major element of knowledge and innovation management is providing the ground for building mutual trust and the developing relationship among the UBC ecosystems players (Santoro and Saparito, 2003). In addition, allocation of funding helps to build the co-operative attitude and increase awareness of the need to develop UBC networks. Furthermore, such factors as feasibility and realism of the knowledge transfer project, clear definition of scope, mission and objectives of each party, management support, the level of risk, company interest and confidence in the university research team and project results, corporate capacity to put results into practice, coordination between university and business teams are another prerequisites of successful innovation-oriented UBC governance.

Geographical proximity between a university and business companies plays an important role in knowledge transfer process as knowledge and/or technology transfer is not costless (Acs and Plummer, 2005). For example, research evidence reveals that short distance between a university and business leads to successful cooperation (Gunasekara, 2004; Fristch, 2001; D'Este and Iammarino, 2010). As distance between the university and business increases, the efficiency of communication, knowledge transfer, and benefits gained from cooperation decreases (Freel, 2002). However, although geographical proximity adds value to UBC, it is not always the major determinant of successful cooperation. The spatial profile of UBC depends on such factors as the research field, research quality and industrial sectors (D'Este and Iammarino, 2010). Research evidence suggests that university departments that high-ranked with regard to research quality tend to attract business partners located at a distance while low-ranked departments look for partners within their neighbourhood (Adams, 2005; Muscion, 2009 cited by D'Este and Iammarino, 2010). It is being argued that business interested in supporting frontier research look for the best university partners despite their geographical location (D'Este and Iammarino, 2010). Research findings also suggest that the higher the concentration of universities in an areas, the more likely businesses tend to cooperate with non-local universities (Hewitt-Dundas, 2013). Furthermore, in technological sciences and engineering, labour mobility, employment of university researchers and influx of students in business companies are found to be an important factor in knowledge and/or technology transfer and innovation development via UBC.

The abstracted process of knowledge and/or technology transfer includes four major stages: identification of knowledge base, transfer, application, and outcome. The basic traditional process of knowledge transfer is illustrated in Figure 16.



Figure 16. Process of knowledge and/or technology transfer
(*Source*: developed by the author)

The competences of knowledge and/or technology transfer officers are particularly important to the process of knowledge and/or technology transfer with regard to traditionally non-commercial nature of the university. Their major functions of knowledge and/or technology office include stimulating entrepreneurial activity, commercializing R&D results providing consultation on start-up and spin-off creation and intellectual property rights (Lockett and Wright, 2005). As academic inventors may not necessarily be the best individual to recognise an opportunity (Lockett et al., 2003), knowledge and/or technology transfer office staff may be more alert to such opportunities and promote interest in commercialization R&D activities among university staff (Lockett and Wright, 2005).

Research literature also suggests current shortfalls in the innovation process. "There is a lack of skill and competence at the collaboration interface (the 'interface-spanning' function), this includes technology transfer and knowledge exchange specialists. There is often a failure to recognise that informal knowledge exchange processes (networks, interactions, graduating students) are frequently the most effective means of knowledge exchange between universities and business" (Universities and Innovation: the Challenge for Europe 2006, p. 1).

UBC governance can be examined from the perspective of management process which includes four major functions: planning, organising, leading and controlling (Daft, 2003). Figure 17 presents the abstracted process of UBC governance functions.

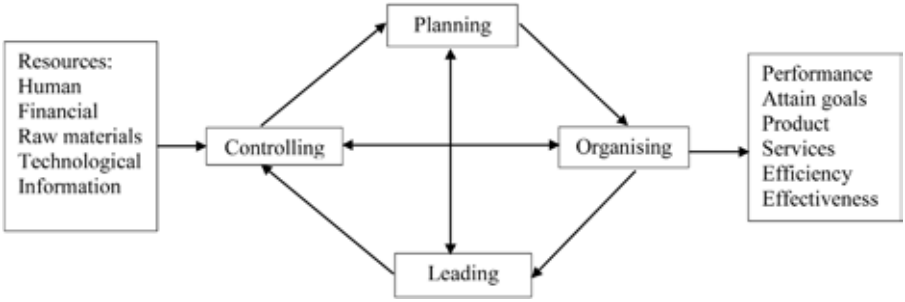


Figure 17. UBC governance functions
(*Source*: developed by the author according to Daft, 2003, p. 6)

Planning refers to the definition of "objectives for future organizational performance and deciding on the tasks and use of resources needed to attain them" (Daft, 2003, p. 6). On the national level, strategic planning is reflected in national agendas, implementation

measures, and funding allocation. On the institutional level, strategic planning is reflected in organizational mission/vision statement, statutes, bylaws, etc. Shareholder involvement and continuous communication are a vital part of planning on the institutional and national level.

Strategic planning method widely used in business can be also transferred to UBC ecosystem governance. It refers to the process of determining what an organization, network or ecosystem should become and how to achieve that objective. It links organizational potential to organizational goals and resources required to achieve them. Strategic planning involves exploring potential areas of activities, articulating priorities, carrying out SWOT analysis, identification, and evaluation of alternative strategies, etc. The tool can be used for UBC governance in changing the direction and performance of universities and businesses, creating a common framework for organizational decision making (Daft, 2003).

Mission and vision statements method is a part of planning process. It helps to identify institutional culture, values, and strategies. A mission statement defines organizational identity, its scope of activities, objectives and ways to reach them. A vision statement is used to visualise the desired future position of a university, business or entire UBC ecosystem. Mission and vision statements can be used for internal and external purposes. Internally the method is used to define performance standards, providing focus and common goals for employees and guide decision-making processes. Externally mission and vision statements can be used to create close cooperation and better communication within UBC ecosystem as well as for public relations purposes.

Furthermore, in UBC process planning stage it is important to identify core competences of the university, business or entire UBC ecosystem. The core competences method refers to a combination of skills and resources that distinguish a university, a business company or entire UBC ecosystem in the marketplace and helps to deliver unique value to beneficiaries and end-users. Developed G. Hamel and C. K. Prahalad in the 1990s the model is based on the principle of identifying institutional core competences, communicating them across an organization and making decisions on their basis. The application of the model helps to establish strategies that unify an organization and invest in the areas of organizational strengths. The model helps employees to understand management priorities, purposefully allocate resources, enter the existing and invent new markets for universities and business companies.

UBC planning process also involved identification of strategic alliances. The method refers to agreements between universities and business companies in which each commits resources to achieve common goals. Strategic alliances method is applied to evaluate and select potential partners for synergy, develop a working relationship, and reduce the costs of economies of scale. Strategic alliances method helps to improve competitive positioning, improve R&D efforts, increase access to new technologies, improve the quality of services, and share the cost of collaborative projects.

Organising usually follows planning and involves the assignment of authority and allocating resources, developing tasks and grouping them. On the national level organising means the assignment of liable institutions for development of structures and measures to enhance UBC and allocation of national or European Union structural budget funds to

UBC activities. On the institutional level organising refers to the assigning management authority who will be in charge of organising UBC governance process, establishing units such as knowledge and/or technology transfer office or IPR management office, developing guidelines and principles, employing and instructing staff, creating motivational and remuneration systems for UBC governance. In addition, provision of financial, material, technological and informational resources is a part of organising function. Following Stakeholder theory stakeholder involvement and communication inside and outside of organization on the need for UBC, benefits, event, processes, successful cases, etc. is a vital part of organising.

Implementation of such management method as benchmarking could also be considered as organising part. Benchmarking refers to comparing processes or the best practices of one institution with the processes or best practices of the other aiming to find examples of superior performance. Universities, business, and public governance use the method to improve their performance and incorporate the best practices of the field in their activities. The method helps to identify opportunities for improvement of organizational performance, build strategic advantage, and increase organizational learning by bringing new ideas and facilitating experience sharing. In 2014–2015 Lithuanian universities took part in the benchmarking exercise organised by the Research and Higher Education Monitoring and Analysis Centre (MOSTA). Research units of the same scientific field were benchmarked. The process included evaluation and benchmarking parameters such as bibliometric analysis of unit's publications, provision of unit's self-analysis, meetings with experts and preparation of evaluation reports targeted at institutions and national policy makers. Drawing on the experience benchmarking exercise of UBC governance practices could be carried out. The management practices of UBC governance of different units according to scientific fields could be benchmarked on the national level.

Leading is an important management function, especially in the context of UBC governance. It means "the use of influence to motivate employees to achieve organizational goals. Leading means creating a shared culture and values, communicating goals to employees throughout the organization, and infusing the employees with the desire to perform at high level" (Daft, 2003, p. 7). With regard to UBC governance on the institutional level leading refers to "taking ownership" of UBC governance on the organizational level. Usually, it is the responsibility of top management who uses his/her authority to lead an organization to achieve the goals established by the strategic organizational bodies. Leading also involves employee empowerment and development of a shared organizational culture and values through continuous communication in the organization on the importance, need and benefits, success cases of engagement in UBC on the individual, departmental and organizational level and involvement of all stakeholders in the process.

For most universities engagement in and management of UBC, commercialization of research and knowledge / technology transfer requires radical changes in the way they have traditionally were managed (Etzkowitz et al., 1997). The challenge of change is even more daunting because universities are highly embedded in well-established

attitudes, norms and strong traditions (DiMaggio and Powell, 1983, Kraatz and Moore, 2002 as cited by Bercovitz, J., Feldman, 2008). The ability of universities to change depends on micro level – leadership, researchers, and administrative staff as "pressures are interpreted, given meaning, and responded to by actors within organizations" (Dacin et al., 2002 as cited by Bercovitz and Feldman, 2008, p. 69). In addition, research findings suggest that the ability of universities to change depends on how researchers are willing to accept administration's support and adopt supportive norms and behaviors (Whelan-Berry et al., 2003). For instance, it requires researchers to shift from individual to teamwork, to cooperate with business partners and raise funds (Hazelkorn, 2005).

Change management either in universities or private sector companies refers to "drive to use management principles to coordinate the way it puts to use such resources as people, processes, and technology to perform its mission in a way that is most cost-effective and performance enhanced"(McNabb, 2009, p. 39). Research finding on change management suggest that successful transformation involves five major elements: effective and fully committed leadership, organization-wide acceptance of the idea that there is a crisis and understanding that it needs to be resolved, shared vision of how the organization will look like in the future, identifying and applying goal achievement measures (McNabb, 2009). A four-level change management model includes identifying and assessing a transformation trigger, evaluating and improving work process, embracing appropriate perspectives, and achieving desired change outcomes (McNabb, 2009). When preparing an organization to accept transformations, management needs to bear in mind resistance that might take the following patterns of thinking and behavior: fear of the unknown, fear of the loss of benefits, fear of a threat to one's position of power. To lessen anticipated resistance to change it is advised to use education and communication, participation and involvement, facilitation and support, negotiation and agreement, manipulation and co-optation, explicit and implicit coercion (Kotter and Schlesinger (1979) as cited by McNabb).

In addition, the following factors of key importance should be taken into consideration when going through the organizational change: the creation of a vision, leadership, reward systems, creation of a climate of communication (Harvey and Brown, 2001 as cited by McNabb, 2009). As human factor is the greatest determinant when defining and implementing organizational change, it is important to alter the behavior of individuals and their groups, their actions and interactions, performance standards and authority structures. Moreover, "the major global challenges cannot be solved by the simple continuation of existing patterns of thinking. Solutions to the challenges of the twenty-first century require aggressive cross-sectional best research and innovation practices"(Czinkota, M.; Pinkwart, A. 2012, p. 277). Figure 18 presents the elements involved in the process of transformation.

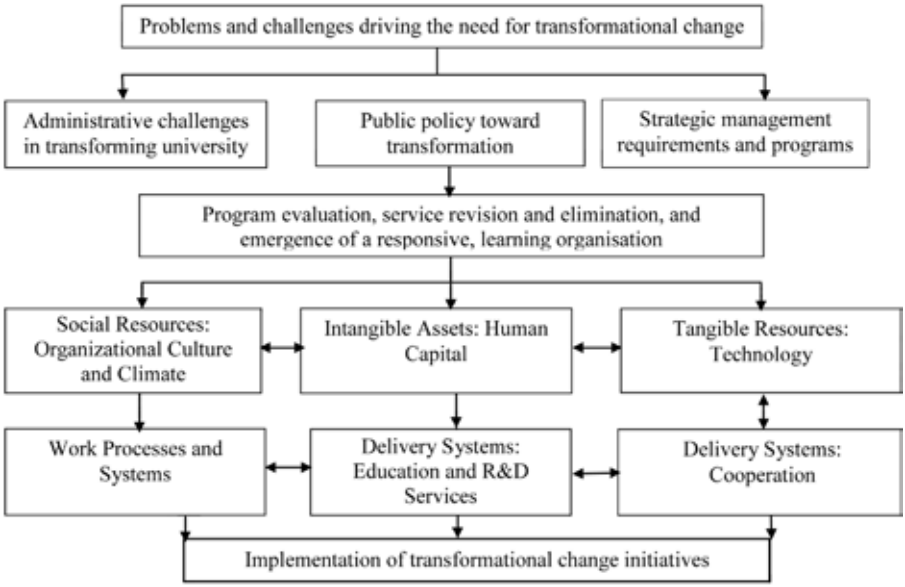


Figure 18. Elements of the transformation process
(*Source*: developed by the author according to McNabb, 2009, p. 16).

As UBC governance requires changes in Lithuanian university and business setting, the method would help to implement strategic initiatives to adapt to changes, focus organization on the set goals, and implement new process initiatives D.E. McNabb suggests the following steps of changing organizational culture for a transformation: to identify potential culture-based problems, identify problem issues, identify optimal change strategies, build commitment for bottom-up change, implement change strategies, assess progress and renew commitment (McNabb 2009, p. 59). The graphical representation of changing organizational culture is depicted in Figure 19.

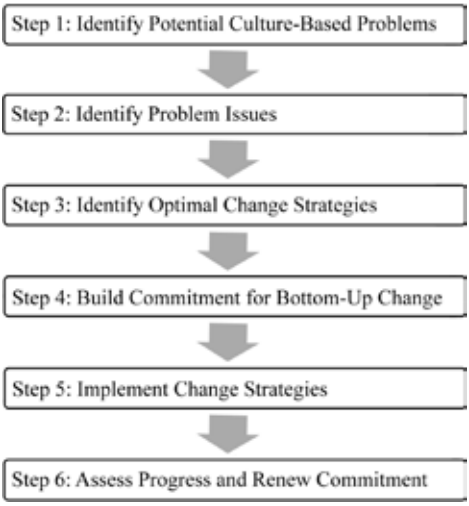


Figure 19. The procces of changing organizational culture for the transformation (*Source*: McNabb, 2009, p. 59).

The final function of the management process is controlling and it refers to "monitoring employee's activities, determining whether the organization is on the target toward its goals, and making corrections as necessary…New management trends toward empowerment and trust of employees have led many companies to place less emphasis on top-down control and more emphasis on training employees to monitor and correct themselves" (Daft, 2003, p. 103). With regard to UBC governance on the institutional level controlling refers to monitoring of structures and processes with regard to performance measurement. It involves developing indicators and systems to measure the progress, attaining objectives, developing product and services in the most effective and efficient manner. Constant organizational, departmental and individual self-evaluation, training, development of peer-assistance groups, and correction of structures and processes is an important part of controlling function. This management function also has to be constantly communicated throughout a university or a business company by recognising leaders and highlighting the successful cases. With regard to the national level, controlling function also involves monitoring structures and processes of the government institutions and agencies, determining whether their activities are on the target to national UBC objectives, implemented in the most efficient and effective manner, and making corrections, if necessary. On the national level controlling also involves less emphasis on top-down control but more emphasis on trust in organisations, providing training, developing peer-assistance groups, constant communication on national progress by recognising the leaders and putting emphasis on successful cases.

Controlling part of UBC ecosystem management can be developed with regard to such management methods as employee engagement surveys and customer relations management methods. Employee engagement surveys method measures whether the

university and business employees are intellectually and emotionally fully involved and enthusiastic about their job, colleagues and institution. It helps to understand what factors have the greatest impact on employee engagement in UBC and retention. The method can help Lithuanian UBC governance to identify and built on the strengths and talents of their employees to gain a competitive advantage. Data sources including anonymous surveys, in-depth discussions with university and business employees at all levels and social media can help to identify the drivers of employee engagement including such areas as the match between personal and organizational values, rewards system, working environment.

Knowledge and/ technology transfer patterns

Certain knowledge and/or technology transfer patterns – administrative, customary and legal-imperative – that were developed and presented in the article "New Medical Knowledge: What Socio-Managerial Mechanisms Enhance its Application in HealthCare Practice?" (Gudelienė et al., 2012) will be examined in the context of this dissertation. These patterns refer to a set of mutually interconnected legal, organizational, cultural and psychological factors that determine UBC and knowledge and/or technology transfer from research to practice. They regulate knowledge and/or technology transfer course and scope, identify the main factor of the process and play the principle role in making decisions which research findings should be implemented in practice (research application will be stimulated) and which ones will be permanently or temporarily rejected (research application will be impeded). Each of these three patterns – administrative, customary or legal imperative – differs from the other two in two ways: 1) who is the main actor responsible for UBC: people working at the university or people working in business; 2) what is the determinant of UBC – administrative measures, past experience, or legal regulations.

Administrative knowledge and/or technology transfer pattern is based on national or international policy obliging a researcher to orient his/her research interests to problems the solution of which guarantees direct practical benefit. The European Union research and its management system can serve as an example. It is included in research funding programmes such as 6th and 7th Framework Programmes and Horizon 2020. Research is directed towards a solution of societal challenges Europe is encountering such as health, demographic change and wellbeing; smart, green and integrated transport; climate action and resource efficiency; Europe in a changing world; leadership in enabling and industrial technologies; secure societies, etc. It means that the research project has become like a business plan that solves specific societal challenges within a defined timeframe and allocated funding. If research outcome is not applied or its application does not provide practical benefit, research results can't be recognised as complete or scientifically valid. Schematically representation of the administrative UBC and knowledge and/or technology transfer pattern is illustrated in Figure 20.



Figure 20. Administrative knowledge and/or technology transfer pattern
(*Source*: developed by the author)

Customary knowledge and/or technology transfer pattern is based on traditions, written and unwritten rules and codes of conduct of a professional community. The main actor is not a researcher but a practitioner and the professional community he is a part of. Members of a professional community can view research findings as their greatest professional authority or, on the contrary, can be quite sceptical about them. A professional community can determine whether a piece of new knowledge is accepted and used (Grundman, 2012). Professional community traditions are used to evaluate the necessity of the application of new knowledge and/or technology or to use the authority of an existing tradition to promote/impede research application. This management framework is widely spread in medical science where practitioners, based on their professional customs and traditions have the right to decide which research findings should be applied and which not. Schematical representation of the customary UBC and knowledge and/or technology pattern is illustrated in Figure 21.

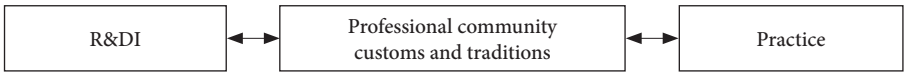


Figure 21. Customary knowledge and/or technology pattern
(*Source*: developed by the author)

Legal-imperative knowledge and/or technology transfer pattern is based on imperative legal provisions that demand to follow the legal prescription each time when some conditions are met (Vaišvila, 2004). The main actor is a practitioner who is completely responsible for research application in his/her activities. Under the legal-imperative framework, a practitioner's performance is measured by the fact whether all up-to-date scientific possibilities were used to ensure the highest performance results. A practitioner needs either to implement the most up-to-date research findings or to be ready to prove (in the court, for instance) that in a given case the research findings were not the best solution. Schematically representation of legal-imperative knowledge and/or technology transfer pattern is illustrated in Figure 22.



Figure 22. Legal-imperative knowledge and/or technology transfer pattern
(*Source*: developed by the author)

2.5. The structures of university and business cooperation

There are several structures on the institutional and national level that facilitate UBC and knowledge or/technology transfer. On the institutional level, they include centres of excellence, interdisciplinary and inter-sectorial centres, and joint laboratories referring to university-based facilities physically grouping different disciplines. The major aim of such structures is to provide services, access to laboratories and equipment for collaborative research with industry. Usually, these structures have premises for meeting with companies, conferences and seminars and the staff of these structures have more discipline-specific

backgrounds (Trueman et al., 2014). Many universities have the internal or external knowledge and /or technology transfer offices (KTOs or TTOs). The major functions of internal KTOs are to support researchers to identify potentially interesting research results, communicate and support negotiation with industrial partners, patent R&D results, establish non-disclosure agreements, and develop start-up or spin-off companies. Currently, there is a trend to externalise KTOs or TTOs. The graphical structure of internal KTO or TTOs is provided in Figure 23.

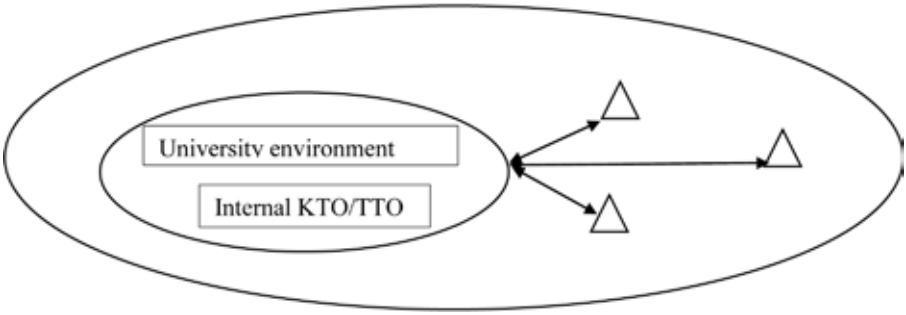


Figure 23. Structure of internal KTO or TTO
(*Source*: Trueman et al. 2014)

As UBC becomes stronger, researchers start to collaborate directly with companies and rely on KTO or TTO more for standard agreements or developing competencies for external activities such as business planning, commercial negotiation and licensing. Then an external KTO or TTO is created to divide tasks and competences between two offices and specialise in providing support to researchers. The external KTO or TTO is established when the goal is to support business innovation requirements and links with the university or divide the tasks and competences of two offices (Trueman et al., 2014).

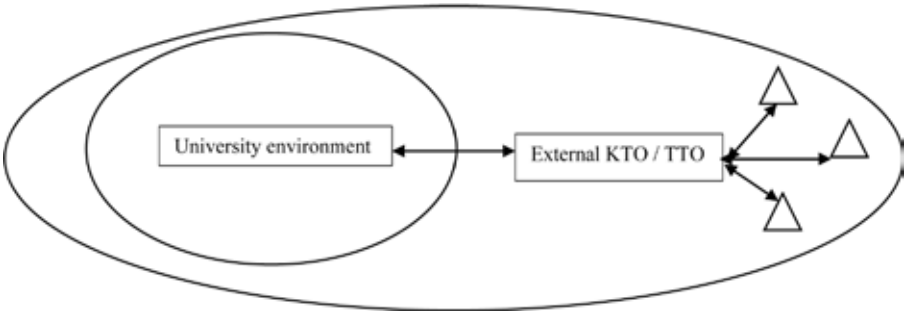


Figure 24. Structure of external KTO or TTO
(*Source*: Trueman et al., 2014)

University-based incubators, innovation centres and ecosystems is another form of UBC governance structures. These are physical spaces (usually within a university campus), run by specialised staff who encourage the creation of start-ups and spin-offs. In the early stages, spin-offs are the closest type of company to the research environment (Trueman at al., 2014).

On the national level, UBC and knowledge and/or technology transfer management structures include valleys, science and technology parks, industrial clusters, etc. They refer to the regions that have the potential of attracting investment and intense UBC. Usually, these structures are funded from the regional or national budget and attract university-based research and technology-based companies. These structures usually are located in one place or 'park', thus reducing distance between universities and businesses, providing a number of joint facilities, and often lease agreements that facilitate UBC (Siegel et al., 2003; Phan et al., 2005; Trueman et al., 2014; Clarysse et al., 2005).

Industrial clusters are another form of UBC governance structures. They refer to "regional concentrations of specialised companies and institutions linked through multiple linkages and spill-overs – provide an environment, conducive to innovation" (The European Cluster Memorandum, 2013). Industrial clusters usually develop around specific university-based research areas and competencies and universities are usually the party that stimulates relationships through joint activities (Trueman, 2014). R. Jucevičius suggests defining clusters in a narrow and broad sense. "In a narrow sense, a cluster is economic agglomeration that is made of companies that operate in related or each other supporting areas. In a broad sense, industrial cluster refers to a regional / sectorial system of social production and innovation that have a big concentration of actors with different competences (e.g. universities, business, municipalities, financial institutions, etc.). Close functioning relations between the parties encourage knowledge and technology transfer and the development of new products and services" (Jucevičius el al., 2009, p. 46). Noteworthy to mention, that in 2008 a European Cluster Memorandum was signed aiming to promote innovation through clusters on the European scale (European Cluster Memorandum, 2013).

Moreover, in the context of this dissertational research, it is noteworthy to examine major drivers, barriers and success factors of UBC. According to the authors of State of European UBC Report, *drivers* refer to those factors that encourage researchers and universities to engage in UBC. Research findings suggest that the drivers of UBC can be the following: the culture of innovation, proactive policies and procedures, the role of visionary and passionate leadership, major events that mobilize academia and business to work together (Smillor et al., 2007); positive role of tax incentives, funding from industrial sources, synergy between university, business and governmental R&D (Younghwan, 2012), availability of public funding with regard to UBC (Metcalfe, 2010), the role of formal (human, financial, physical and commercial resources) and informal factors (networks, status, location, attitude of university community) (Guerrero at al., 2011), the nature of scientific discipline of the university (Philpott et al., 2011). The major drivers of UBC in Europe are depicted in Table 7.

Table 7. Major drivers of UBC in Europe

Type of driver	Explanation
Relationship drivers	Drivers that relate to the relationship between the academic/higher education institutions (HEI) and the business, and these include: • Existence of mutual trust • Existence of mutual commitment • Having a shared goal • Understanding of common interest by different stakeholders (e.g. HEIs; business; individuals; students) • Prior relation with the business partner • Cooperation as effective means to address societal challenges and issues
Business drivers	Drivers that relate to the business factors that motivate UBC; and these include: • Employment by business of HEI staff and students • Interest of business in accessing scientific knowledge, • Possibility of accessing funding / financial resources for working with business, • Short geographical distance of the HEI from the business partner, • Flexibility of business partner, • Access to business-sector research and development facilities, • Commercial orientation of the HEI.

Source: Barriers and Drivers in European University-Business Cooperation, 2011, p. 5.

Barriers of UBC have received much research attention as well. The authors of the State of European UBC Report suggest that "barriers are those obstacles that restrict or inhibit the ability of academics or HEIs to engage in UBC. Resulting from a factor analysis of the results, barriers can be categorised in the following groups: i) usability of results; ii) funding barriers and iii) relational barriers" (The State of University-Business Cooperation in Austria, 2013, p. 8). The funding barriers include too much reliance on state funding and lack of funding and resources (Guerrero et al., 2011; Inzelt, 2004). The examples of relational barriers include the negative attitude of academic community towards entrepreneurial university and tendency to support knowledge as a public good versus knowledge commercialization approach (Goldstein, 2010), the absence of entrepreneurial culture and lack of role model within a university, institutional structures and procedural barriers (Phillpot et al., 2011). The major barriers of UBC in Europe are depicted in Table 8.

Table 8. Major barriers of UBC in Europe

Type of barrier	Explanation
Usability of results	Barriers that relate to the way the results of UBC (mainly R&D results) are utilised by business; and these include: • The focus on producing practical results by business, • The need for business to have confidentiality of research results, • Business fears that their knowledge will be disclosed.
Funding barriers	Barriers that relate to the provision of funds for UBC from both internal and external sources and these include: • Lack of external funding for UBC, • Lack of financial resources of the business, • Lack of HEI funding for UBC, • The current financial crises.
Relational barriers	Barriers that relate to or affect the actual UBC relationship or interactions, occurring between the academic /HEI and the business; and these include: • Business lack awareness of HEI research activities / offerings, • The limited absorption capacity of SMEs to take on internships or projects, • Differing time horizons between HEI and business, • Differing motivation / values between HEI and business, • HEIs lack awareness of opportunities arising from UBC, • Bureaucracy within or external to the HEI, • Limited ability of business to absorb research findings, • Differing mode of communication and language between HEI and business, • A lack of contact people with scientific knowledge within business, • Difficulty in finding the appropriate collaboration partner, • No appropriate initial contact person within either the HEI or business.

Source: Barriers and Drivers in European University-Business Cooperation, 2011, p. 6.

UBC success factors are also noteworthy to examine in the context of this dissertation. Table 9 was developed by the author using the abstracting method on the basis of 30 Good Practice Case Studies in University and Business Cooperation developed by Munster University of Applied Sciences.

Table 9. UBC success factors in Europe

Structural	Skilled interdisciplinary team of knowledge / technology transfer mediators (research and industrial back-ground),
	Brand name of the university
	Budget limitations
	High-level management commitment
	Established commercial models
	Community engagement
	Establishment of neutral location for UBC
	Running UBC in cost-efficient and agile manner
	Establishment of world-class facilities
	Development of a commercial business holding on university campus
	Organizational support
Behavioural	Openness, transparency and positive image
	Ability to link research potential with business needs
	Proactive attitude
	Team working, problem-solving and creating demonstrable solutions
	Proactive networking
	Producing measurable results
	Continuous look at external realities and the most successful cases
	'Honest broker approach'
	Working in proximity to researchers (assists in building trust and relationships)
	Trust built through earlier contacts and projects

Source: developed by the author on the basis of 30 Good Practice Case Studies in University and Business Cooperation, 2011.

Summary and discussion

To summarise, recent research on UBC governance takes one of two perspectives: network management (NM), knowledge (KM) and innovation management (IM) perspective. NM perspective presents UBC ecosystem management from individual researcher's, university or business company management, or public governance point of view. NM perspective differs from the hierarchical management perspective in terms of organizational setting, goal structure, the role of manager, management tasks, and management activities. Three forms of NM have been distinguished: self-governed or participant-governed network, management by a lead organization, management by a network administrative organization. The core elements of functioning UBC networks

include relational factors and managerial factors. The determining elements for the success or failure of NM include initial leadership disposition towards cooperation, support structures, performance measurement and willingness to change. Achieving results from UBC networks requires the ability to set goals, align values, to establish trust, structure incentives, measure performance, share risk and managing change.

Several categories of factors influencing the probability of a university researcher to take part in UBC: demographic characteristics, educational background and position in the academic community. Organizational involvement in the networks of value creation was examined from the ultimate mission point of view. Recently university mission has expanded from the twofold mission of providing education and research by adding the third mission – outreach or service to society. Business mission primarily refers to profit generation. Companies cooperate with universities for different reasons including access to expertise and talent, address the lack of own technical staff, improve access to funding, reduce costs and risks by co-financing research and using university infrastructure, solving business-specific problems enhancing productivity, obtaining visibility, etc. The primary objective of public governance is to develop the legal, political and economic framework to enhance UBC. It includes developing national strategic priorities, operational agendas, UBC support measures and allocating funds to enhance UBC. Public governance also plays a vital role in creating business environment, directing student flows to certain educational areas, shaping national research priorities and forming public opinion.

KM perspective presents knowledge generation, accumulation, transfer, application, and measurement processes as a consequence of UBC. The process of KM include identifying the gap between existing organizational skills and the required ones. Developing KM strategies includes organization knowledge mapping, capturing tacit and explicit knowledge, knowledge transfer for maximum returns, integrating KM processes into organizational culture, classifying and storing knowledge. The major objective of KM include development of organizational culture that is knowledge acceptable on the normative level, development of experience patterns, disclosing the content of organizational knowledge and ensuring that organizational structures and management systems are in line with KM management on the strategic level. Two current trends – the shift to a learning and technology-driven organization – have a particular impact on UBC. External knowledge can be gained by managing stakeholder knowledge. The major areas and types of knowledge and/or technology transfer via UBC can be categorised into three major categories: development of UBC, inter-sectorial mobility and non-contract cooperation.

Several structures on the institutional and national level facilitate UBC and knowledge or/technology transfer. On the institutional level they include centres of excellence, interdisciplinary-inter-sectorial centres, and joint laboratories, internal or external knowledge and /or technology transfer offices, university-based incubators, innovation centres and ecosystems. On the national level UBC and knowledge and/or technology transfer management structures include valleys, science and technology parks.

The major drivers, barriers and success factors of UBC were examined. The major drivers of UBC include relational and business drivers. The major barriers can be categorised in three groups: usability of results; funding barriers and relational barriers. The main success factors of UBC are structural and behavioural.

3. THE INTERNATIONAL CONTEXT OF UNIVERSITY AND BUSINESS COOPERATION GOVERNANCE

Part 3 will examine the context and best practices in Europe, the United States of America and Canada. The analysis is based on the European Commission's Platform on Research and Innovation policies and systems, ERAWATCH country profiles and the extensive research on university and business cooperation conducted by Science-to-Business Marketing Research Centre, Germany, under the tender of the European Commission Directorate General Education and Culture.

Although the European Union recognises the importance of universities as education, research and innovation providers and their vital contribution to economic competitiveness, in terms of the national policies comparative empirical research results are limited. Most of the studies focus on old Member states as, for instance, the UK and Germany (Haeussler and Colyvas, 2011), Sweden and Ireland (Klofsten and Jones-Evans, 2000). In addition, Science-to-Business Marketing Research Centre under the Munster University of Applied Sciences, Germany, carried out the quantitative survey of over 3000 European universities in 33 countries in 2011. They suggest that "whilst there are some exceptions, cooperation between HEIs and business in Europe is still in the early stages of development" (30 Good Practice Case Studies in University and Business Cooperation, 2011, p. 9). To illustrate the broader geographical context of UBC governance, carry out comparative analysis and segregate the best examples for Lithuanian UBC governance models, the practice of Anglo-Saxon, German-speaking, Francophonic, Scandinavian, Southern Europe and Eastern and Central Europe will be examined.

3.1. Anglo-Saxon countries: leading the tradition of university and business cooperation

United Kingdom

UBC governance in the UK is the most developed in Europe. The data of the Global Competitiveness Report 2014–2015 show that according to UBC in R&D indicator the UK ranked 9th among 144 countries (Global Competitiveness Report 2014–2015, p.) and the year before it was 10th among 148 countries of the world (Global Competitiveness Report 2013–2014, p.). According to the indicator 'university-industry collaboration in R&D' the country ranked 4th in 2014–2015 (Global Competitiveness Report 2014–2015, p. 377) and 5th in 2013–2014 (Global Competitiveness Report 2013–2014, p. 381). There are a political interest and practical budgetary support to UBC through several programmes and measures. The UK focus is on the support of commercialisation of R&D. Support is provided to collaborative R&D projects, commercialization of new and emerging technologies, the creation of spin-out companies, development of venture and seed capital streams, regional grants are allocated for incubators, science and technology parks (Platform on Research and Innovation Policies and Systems ERAWATCH). The most developed types of UBC are collaboration and commercialisation of R&D results and entrepreneurship (The State of University-Business Cooperation in the United Kingdom, 2013).

The UK universities have entrepreneurial approach, the majority of them have knowledge / technology transfer offices (D'Este and Patel, 2007). The major challenges to UBC governance in the UK include lack of financial resources from business, limited R&D absorption capacity of SME's, lack of awareness of HEI research activities/offerings (The State of University-Business Cooperation in the United Kingdom, 2013), insufficient incentives and rewards for university staff to develop spin-offs (Locket et al., 2003), lower royalty rates encourage to start a venture to exploit technology rather than license it (DiGregorio and Shane, 2003 as cited by Locket and Wright, 2005).

Ireland

The country has a long tradition of UBC that lasts over several decades. UBC is enhanced by national research funding framework that promotes collaborative inter-institutional projects. According to the Global Competitiveness Report 2014–2015 Ireland ranked 9th among 144 countries (Global Competitiveness Report 2014–2015, p. 218) and according to the Global Competitiveness Report 2013–2014 it was 28th among 148 countries of the world (Global Competitiveness Report 2013–2014, p. 222). According to the indicator 'university-industry collaboration in R&D' the country ranked 13th in 2014–2015 (Global Competitiveness Report 2014–2015, p. 377) and 2013–2014 (Global Competitiveness Report 2013–2014, p. 381).

The Programme Government for National Recovery 2011–2016 suggests support to investment in technology research, commercialization, removing barriers to innovation and acceleration of new technologies (Platform on Research and Innovation Policies and Systems ERAWATCH). Enterprise Ireland's Campus Incubation programme provides support for business innovation centres linked to the universities. Moreover, the Government also established a central Technology Transfer Office that operates as 'one stop shop' for cooperation between universities and industry (Platform on Research and Innovation Policies and Systems ERAWATCH).

The most developed types of UBC in Ireland are cooperation in and commercialisation of R&D results and entrepreneurship. The major barriers to UBC in Ireland are perceived to be the lack of funding, limited absorption capacity of business to take on internships or projects and limited awareness of business about university research activities/offerings. UBC governance strategies are moderately developed in Ireland (The State of University-Business Cooperation in Ireland, 2013).

The United States of America

The United States of America are leaders of innovation and UBC governance environment. The Global Competitiveness Report 2014–2015 ranked the United States of America 3rd among 144 countries (Global Competitiveness Report 2014–2015, p. 377) and the Global Competitiveness Report 2013–2014 ranked the country 5th among countries of the world (Global Competitiveness Report 2013–2014, p. 382). According to university–industry collaboration in R&D the USA ranked 2nd in 2014–2015 (Global Competitiveness Report 2014–2015, p. 377) and 3rd in 2013–2014.

In 1980 Bayh-Dole Act was endorsed in the United States of America and provided a framework for small business companies and non-for-profit organisations to retain

their rights to inventions made under federally-funded research programmes. It enabled UBC and R&D commercialisation including the possibility to retain title to innovations developed under federally-funded research programmes (Study on University-Business Cooperation in the US, 2013, p. 29). The Bayh-Dole Act granted universities and not individual inventors intellectual property rights thus decreasing the conflict of interest and encouraging universities to commercialise R&D results (Lockett and Wright, 2005). In addition, there is research evidence that American university system is effective in facilitating commercialisation of R&D results (Goldfarb and Henrekson, 2003).

In 2011 America Invents Act was signed aimed to "help American entrepreneurs and businesses bring their inventions to market sooner, creating new businesses and new jobs" (Study on University-Business Cooperation in the US, 2013, p. 30). Several non-governmental organisations aimed at UBC governance operate in the United States, as, for instance, the Start-up America Partnership uniting major corporations, funders, service providers and mentors working together to increase entrepreneurship in America (Study on University-Business Cooperation in the US, 2013, p. 32). Another UBC enhancing organization is the Council of Competitiveness which brings together CEOs, university presidents, and labour market leaders to promote UBC (Start-up America Partnership, p. 33). The National Business Incubation Association promotes business incubation and entrepreneurship by providing information, education, advocacy and networking resources.

Canada

The Global Competitiveness Report 2014–2015 ranked Canada 15th among 144 countries (Global Competitiveness Report 2014–2015, p. 353) and the Global Competitiveness Report 2013–2014 ranked the country 15th among 148 countries of the world (Global Competitiveness Report 2013–2014, p. 382). According to the indicator 'university-industry collaboration in R&D' Canada ranked 19th in 2014–2015 (Global Competitiveness Report 2014–2015, p. 377) and 18th in 2013–2014 (Global Competitiveness Report 2013–2014, p. 381).

There is a well-developed cross-agency cooperation in Canada to facilitate research-driven innovation via UBC. For example, the Network of Centres of Excellence,which is a joint initiative uniting social sciences, technology and engineering and health research funding agencies, runs two UBC cooperation promoting programmes and helps to mobilize multi-disciplinary research capacity from across Canada (Networks of Centres of Excellence of Canada, 2015). The Canadian Council for Small Business and Entrepreneurship is the only non-governmental organization aimed at promoting small business and entrepreneurship. The organization provides a discussion forum and networking possibilities for business people, practitioners and policy makers in the field (The Canadian Council for Small Business and Entrepreneurship, 2015).

The major forms of UBC in the US and Canada include knowledge transfer, entrepreneurship education and training, involvement of academic staff and students in solving specific business problems, research partnerships, student and staff inter-sectorial mobility, cooperation in curricula development, involvement of business representatives in university boards, investment in infrastructure, patenting and equity arrangements (Study on University-Business Cooperation in the US, 2013).

The major drivers of UBC in the USA include availability and stability of financial and human resources, the favourable environment for education, research, entrepreneurship and innovation, regional development needs, institutional culture of collaboration, research, entrepreneurial educational and technology commercialization (Study on University-Business Cooperation in the USA, 2013). The major drivers of UBC governance in Canada include ensuring sustainable financial resources and research infrastructures, availability of human resources, development of university-business nexus (Study on University-Business Cooperation in the USA, 2013).

The major barriers to UBC in the USA are considered to be differences in research approach and priorities in intellectual property approach, the conditions attached to financial sustainability, university faculty attitude towards academic entrepreneurship, availability of experienced human resources, etc. (Study on University-Business Cooperation in the USA, 2013). The major barriers to UBC in Canada are perceived as internal and external university institutional resistance, competitive pressures, the absorptive capacity of the local economy, availability of sustainable funding, availability of human capacity, etc.(Study on University-Business Cooperation in the USA, 2013).

3.2. German-speaking countries: continuing the tradition of university and business cooperation

Germany

The country is one of the leaders of UBC governance globally. The data of the Global Competitiveness Report 2014–2015 shows that according to general innovation indicator Germany ranked 9th among 144 countries (Global Competitiveness Report 2014–2015, p. 377) and according to the Global Competitiveness Report 2013–2014 it was 4th among 148 countries of the world. According to the indicator 'university-business collaboration in R&D' the country ranked 10th in 2014–2015 (Global Competitiveness Report 2014–2015, p. 377) and 9th in 2013–2014 (Global Competitiveness Report 2013–2014, p. 381). The Innovation Union Scoreboard 2015 report suggests that Germany together with Finland, Sweden and Denmark is considered as one of four Innovation leaders in Europe with innovation performance well above the EU average (Innovation Union Scoreboard, 2015).

The German UBC system is rather complex and characterized by shared responsibilities between the federal level and the states (*Länder*). The most developed types of UBC in Germany include mobility of students and commercialisation of R&D (The State of University-Business Cooperation in Germany, 2013). The major drivers of UBC in Germany are relationship drivers: the existence of mutual trust and commitment, and having a shared goal, interest of business in accessing scientific knowledge, understanding of common interest by different stakeholders (The State of University-Business Cooperation in Germany, 2013). The major barriers in German UBC systems are the following: business lack awareness of university research activities/offerings, heavy bureaucracy within or external to universities, different understanding between university and business, lack of financial resources of the business, lack of external funding for UBC governance (The State of University-Business Cooperation in Germany, 2013).

Austria

The Global Competitiveness Report shows that according general innovation indicator Austria ranked 16th in 2014–2015 (Global Competitiveness Report 2014–2015, p. 116) and 2013–2014 (Global Competitiveness Report 2013–2014, p. 112). According to the indicator 'university-business collaboration in R&D' the country ranked 24th in 2014–2015 (Global Competitiveness Report 2014–2015, p. 116) and 23rd in 2013–2014 (Global Competitiveness Report 2013–2014, p. 112). European Platform on Research and Innovation Policies and Systems indicate that during the last years Austria has moved from innovation follower to forerunner. The most fundamental measures that lead to this shift include transformation "from fragmented to coordinated and consistent public interventions based on a shared vision and a joint strategy, and advance from an imitation to a more radical innovation strategy" (Platform on Research and Innovation Policies and Systems ERAWATCH, 2015).

The major forms of UBC governance in Austria are UBC in R&D and commercialisation of R&D results, both being above the European average. The main drivers of UBC in Austria include existence of mutual trust, understanding of common interest and commitment by different stakeholders; interest of business in accessing scientific knowledge (The State of University-Business Cooperation in Austria 2013 p. 12; Schartinger et al., 2001; Shartinger et al., 2002). Research results also indicate that the primary barriers to UBC governance in Austria are the following: "different motivation / values between university and business; lack of financial resources of the business; differing time horizons between university and business; business lack awareness of university research activities/offerings; lack of external funding for UBC" (The State of University-Business Cooperation in Austria 2013 p. 10). UBC is an important element in the strategic documents of Austrian universities including university mission / vision statements (Dan, 2012).

3.3. Scandinavian countries: fostering pragmatic tradition of university and business cooperation

Finland

According to the Global Competitiveness Report Finland ranks in the top positions globally. For instance, in 2014–2015, it ranked 4th (Global Competitiveness Report 2014–2015, p. 180) while took 3rd position in 2013–2014 (Global Competitiveness Report 2013–2014, p. 184). According to the indicator 'university-business collaboration in R&D' the country ranks 1st position in the world. The same position is substantiated by the authors of the European University-Business Cooperation Country Reports who suggested that "the country has a Europe-leading environment and approach to university-business cooperation, especially in cooperation in R&D"(The State of University and Business Cooperation in Finland, 2013, p. 4). The Innovation Union Scoreboard 2015 report suggests that Finland is considered as one of four Innovation leaders in Europe with innovation performance well above the EU average (Innovation Union Scoreboard, 2015). The leading position globally was stimulated by the Finnish Inventions Act that was endorsed in 2007 and gave universities the right to invention ownership. In addition, Finland has an extensive geographical network of universities along with their

own regional units, innovation platforms and incubators in many towns (Platform on Research and Innovation Policies and Systems ERAWATCH, 2015).

The main forms of UBC governance in Finland are UBC in R&D, mobility of students, and lifelong learning (The State of University-Business Cooperation in Finland, 2013). The major drivers of UBC governance include existence of mutual trust and commitment, understanding of common interest by different stakeholders, short geographical distance between universities and business, prior UBC relations (The State of University-Business Cooperation in Finland, 2013). The major barriers of UBC are the following: "differing time horizons between university and business, the limited absorption capacity of SMEs to take on internships or projects, business lack awareness of university research activities/ offerings" (The State of University-Business Cooperation in Finland, 2013, p. 14).

Sweden

Sweden has favourable conditions for innovation and UBC governance. Global Competitiveness Report ranks Sweden in the top positions globally. For instance, in 2014–2015, it ranked 10th while in 2013–2014 the country was even in 4th position. According to the indicator 'university-business collaboration in R&D' the country ranked 11th position in the world in 2014–2015 (Global Competitiveness Report 2014–2015). According to Innovation Union Scoreboard 2015, Sweden is considered one of four Innovation leaders in Europe with innovation performance well above the EU average (Innovation Union Scoreboard, 2015). The main policy instruments enhancing UBC are the centre of excellence programmes aiming to create excellent academic research environments in which companies take an active part. The most developed types on UBC in Sweden are UBC in R&D and commercialisation of R&D results (The State of University- Business Cooperation in Sweden, 2013).

The main drivers of UBC in Sweden include existence of mutual trust and commitment, business employment of university staff and students, prior relation with the business partners and a short geographical distance between a university and a business partner (The State of University- Business Cooperation in Sweden, 2013). In addition, due to top-down policies of university IPR commercialization, full faculty have ownership of IPR (Etzkowitz et al., 2000b; Goldfarb and Henrekson, 2003). The main barriers to UBC in Sweden include the business need to have confidentiality of research results, differing mode of communication and language between university and business, differing time horizons, motivation and values, limited absorption capacity of SMEs to take on internships or projects, bureaucratic attempts to directly establish university policy (Goldfarb and Henrekson, 2003).

Norway

Norway has also a well-established environment for innovation and UBC governance. Global Competitiveness Report and ranked Norway 11th position in 2013–2014 and 2014–2015 (Global Competitiveness Report 2014–2015, Global Competitiveness Report 2013–2014). According to the indicator 'university-business collaboration in R&D' the country ranked 15th position globally in 2014–2015 (Global Competitiveness Report 2014–2015). According to Innovation Union Scoreboard 2015 Norway is considered a moderate

innovator in Europe and a strong dimension is open, excellent and attractive research system (Innovation Union Scoreboard, 2015). The Norwegian R&D and UBC governance system has a multitude of actors at the political and operational level. In terms of UBC governance, the commercialisation act was introduced in 2003 due to which universities have been increasingly setting up technology transfer offices and using science parks and incubators to develop relations with business companies. Another important measure in the realm of UBC governance is the industrial Ph.D. scheme established in 2008 (Platform on Research and Innovation Policies and Systems ERAWATCH, 2015). Entrepreneurship in education and providing employment and working conditions for researchers has been a priority area in Norway.

Denmark

Global Competitiveness Report ranked Denmark 13th position in 2014–2015 and in 2013–2014 it was in the 15th place (Global Competitiveness Report 2014–2015, p. 168; Global Competitiveness Report 2013–2014, p. 170). According to the indicator 'university-business collaboration in R&D' the country ranked 20th position globally in 2014–2015 (Global Competitiveness Report 2014–2015, p. 168). According to the Innovation Union Scoreboard 2015, Denmark is considered as one of four innovation leaders in Europe with innovation performance well above the EU average (Innovation Union Scoreboard, 2015).

Denmark has a well-developed centralised R&D and UBC governance system on the national level has changed substantially during the last 15 years. The current R&D government systems have an advisory part with the Danish Council for Research Policy and the funding part of the Council for Independent Research and the Council for Strategic Research (Platform on Research and Innovation Policies and Systems ERAWATCH, 2015). The importance of UBC as source for Danish competitiveness in the knowledge economy and national innovation systems is increasing and becoming more recognised as such (Gregersen and Rasmussen, 2008). Moreover, increasing knowledge intensity in business companies and public sector institutions is reflected in more staff with higher education degrees and more collaboration in R&D (Gregersen et al., 2009).

3.4. Francophonic and Benelux countries: developing the tradition of university and business cooperation

France

Global Competitiveness Report ranked France 23rd position in 2014–2015 and 2013–2014 (Global Competitiveness Report 2014–2015, p. 182; Global Competitiveness Report 2013–2014, p. 186). According to the indicator 'university-business collaboration in R&D' the country ranked 29th position globally in 2014–2015 (Global Competitiveness Report 2014–2015, p. 182). According to the Innovation Union Scoreboard 2015, France was considered as innovation follower with the innovation performance above or close to the EU average (Innovation Union Scoreboard 2015). In order to implement open innovation, involving public research and foster knowledge transfer via UBC several agencies make sustainable public-private partnerships. The major forms of UBC are cooperation in R&D, mobility of students, and academic curriculum development and delivery (The State of

University and Business Cooperation in France, 2013). The major drivers for UBC are relational and include understanding of common interest by different stakeholders, existence of mutual trust and commitment, having a shared goal, and prior relation with the business partner (The State of University and Business Cooperation in France 2013). The greatest barriers to UBC in France are differing time horizons between university and business, business lack awareness of university research activities / offerings, universities lack awareness of opportunities arising from UBC, shortage of external and university funding (The State of University and Business Cooperation in France, 2013).

Belgium

Global Competitiveness Report ranked Belgium 18th position in 2014–2015 and 17th position in 2013–2014 (Global Competitiveness report 2014–2015, p. 126; Global Competitiveness Report 2013–2014, p. 122). According to the indicator 'university-business collaboration in R&D' the country ranked 6th position globally in 2014–2015 (Global Competitiveness report 2014–2015, p. 126). According to the Innovation Union Scoreboard 2015, Belgium ranked as innovation follower with the innovation performance above or close to the EU average (Innovation Union Scoreboard, 2015). The same level is indicated by the data of the European University-Business Cooperation Country Report (The State of University-Business Cooperation in Belgium, 2013). Research policy with innovation policy and UBC are the responsibility of the Belgian regions. "Like many of the north-western European countries, the leading types of UBC are collaboration in R&D and mobility of students, the greatest drivers of UBC are relationships" (The State of University-Business Cooperation in Belgium, 2013, p. 1). The primary barriers to UBC in Belgium are the following: the limited absorption capacity of SMEs to take on internships or projects, business lack of financial resources, differing time horizons between university and business, lack of external and university funding for UBC (The State of University-Business Cooperation in Belgium, 2013).

Netherlands

The Global Competitiveness Report ranked Netherlands 8th position in 2014–2015 and in 2013–2014 (Global Competitiveness Report 2014–2015, p. 288; Global Competitiveness Report 2013–2014, p. 294). According to the indicator 'university-business collaboration in R&D' the country ranked 9th position globally in 2014–2015 (Global Competitiveness Report 2014–2015, p. 288). According to the Innovation Union Scoreboard 2015, Netherlands ranked as innovation follower with the innovation performance above or close to the EU average (Innovation Union Scoreboard, 2015). The Dutch government has developed many policy instruments to promote UBC governance. UBC in R&D, mobility of students, and entrepreneurship are the most developed types in the Netherlands (Innovation Union Scoreboard, 2015). As in Europe generally, relationship drivers such as existence of mutual trust and commitment and understanding of common interest are the biggest drivers of UBC in the country. The major barriers to UBC are lack of external funding for UBC and differing time horizons between universities and business(Innovation Union Scoreboard, 2015).

3.5. Southern European countries: enjoying the tradition of university and business cooperation

Italy

Global Competitiveness Report ranked Italy 49th position in 2014–2015 and in 2013–2014 (Global Competitiveness Report, 2014–2015, p. 222; Global Competitiveness Report, 2013–2014, p. 226). According to the indicator' university-business collaboration in R&D' the country ranked 59th position globally in 2014–2015 (Global Competitiveness Report, 2014–215, p. 222). According to the Innovation Union Scoreboard 2015, Italy ranked in the same category as Lithuania as moderate innovators with the innovation performance below that of the EU average (Innovation Union Scoreboard, 2015). Research and innovation efforts are also supported by tax credits for businesses financing university projects or if employing highly skilled employees (Platform on Research and Innovation Policies and Systems ERAWATCH). The main forms of UBC in Italy include cooperation in R&D and commercialisation of R&D results. Main drivers of UBC are relational and the major barriers include lack of university funding for UBC, lack of financial resources of the business, lack of external funding for UBC, and business lack of awareness about university research activities / offerings (The State of University and Business Cooperation in Italy, 2013).

Spain

According to Global Competitiveness Report Spain ranked 35th position in 2014–2015 and 2013–2014 (Global Competitiveness Report, 2013–2014, p. 348). The indicator 'university-business collaboration in R&D' put the country in the 57rd position globally in 2014–2015 (Global Competitiveness Report, 2014–2015, p. 342). According to the Innovation Union Scoreboard 2015, Spain also ranked in the same category as Lithuania – moderate innovators with the innovation performance below that of the EU average (Innovation Union Scoreboard, 2015). Spain has a short tradition of UBC but during the last years, the country developed policies facilitating it (Lopez et al., 2014). The main forms of cooperation in Spain are cooperation in R&D (mainly through contracted research), the mobility of students and lifelong learning. The major drivers of UBC are relational including existence of mutual trust and commitment and structural including employment of university staff and students in business, having a shared goals, and understanding of common interest by different shareholders. (The State of University and Business Cooperation in Spain, 2013). The barriers are related to financing: limited absorption capacity of SME's to take on internships or projects, lack of financial resources of business, and lack of external funding for UBC (The State of University and Business Cooperation in Spain, 2013).

Portugal

Global Competitiveness Report ranked Portugal 36th position in 2014–2015 and in 2013–2014 the country was in 51st place (Global Competitiveness Report, 2014–2015, p. 312; Global Competitiveness Report 2013–2014, p. 318). According to the indicator 'university-business collaboration in R&D' the country ranked 23rd position globally

in 2014–2015 (Global Competitiveness Report, 2014–2015, p. 312). According to the Innovation Union Scoreboard 2015 Portugal ranked in the same category as Lithuania – moderate innovators with the innovation performance below that of the EU average (Innovation Union Scoreboard, 2015). R&D governance is dominated by the public sector and marked by the high degree of centralisation. The major forms of UBC cooperation include mobility of students and lifelong learning while collaboration in R&D and commercialisation of R&D results are less developed than in other European countries (The State of University-Business Cooperation in Portugal, 2013). The major drivers of UBC are relationship drivers, such as the existence of mutual trust and commitment and understanding of common interest. The Portuguese think that the major barriers to UBC are the lack of funding and bureaucracy (The State of University-Business Cooperation in Portugal, 2013).

3.6. Central and Eastern European countries: building the tradition of university and business cooperation

Poland

Global Competitiveness Report ranked Poland 43rd position in 2014–2015 and 42nd in 2013–2014 (Global Competitiveness Report, 2014–2015, p. 310; Global Competitiveness Report, 2013–2014, p. 316). However, according to the indicator 'university-business collaboration in R&D the country ranked 73rd position globally in 2014–2015 (Global Competitiveness Report, 2014–2015, p. 310). According to Innovation Union Scoreboard 2015, Poland ranked in the same category as Lithuania, as moderate innovators, with the innovation performance below the EU average (Innovation Union Scoreboard, 2015). Polish R&D system is still dominated by public funding and central governance. Poland "lacks commitment and cultural orientation towards UBC", the authors of the European University-Business Cooperation Country Reports suggest (The State of University-Business Cooperation in Poland, 2013, p. 1). Primary drivers of UBC in Poland are the following: prior relation to the business partner, the existence of mutual trust and commitment, having a shared goal, and understanding of common interest by different stakeholders. The major barriers include lack of funding, differing motivation / values between the university and business, the limited ability of business to absorb research findings, bureaucracy within or external to the university (The State of University-Business Cooperation in Poland, 2013, p. 10).

Latvia

The Global Competitiveness Report ranked Latvia 42nd position in 2014–2015 and 52nd in 2013–2014 (Global Competitiveness Report, 2014–2015, p. 242; Global Competitiveness Report, 2013–2014, p. 246). However, according to the indicator 'university-business collaboration in R&D' the country ranked 63rd position globally in 2014–2015 (Global Competitiveness Report 2014–2015, p. 242). According to the Innovation Union Scoreboard 2015 Latvia ranked in the same category as Lithuania, as moderate innovators, with innovation performance below that of the EU average (Innovation Union Scoreboard 2015). The Latvian R&D system is financed from the

state budget and primarily regulated by the Law on Research Activity. UCB support until recently was primarily implemented through EU Structural Funds for the period of 2007–2013 aimed at support to liaison offices for technology transfer, enhance UBC. However, it became evident that implementation of the programmes faces the shortage of human resources and that innovation and UBC system is underfinanced in the country.

Estonia

The Global Competitiveness Report ranked Estonia 29th position in 2014–2015 and 32nd in 2013–2014 (Global Competitiveness Report, 2014–2015, p. 176; Global Competitiveness Report, 2013–2014, p. 176). According to the indicator 'university-business collaboration in R&D' the country ranked 24th position globally in 2014-2015 (Global Competitiveness Report 2014–2015, p. 176). According to Innovation Union Scoreboard 2015, Estonia ranked in the same category as Lithuania, as moderate innovators, with the innovation performance below that of the EU average (Innovation Union Scoreboard, 2015). Estonia has a centralised R&D system. UBC support measures are well-developed.

Table 10. Abstracted public governance structures and incentives

Country groups	Public governance structures that facilitate USB	Public governance incentives that facilitate UBCs
Anglo-Saxon countries	There is a political interest and practical budgetary support to UBC through several programmes and measure. Numerous initiatives from federal to the state level, mediated by federal funding agencies are targeted at UBC. Technology transfer offices operates as 'one stop shop' for UBC. There is a well-developed cross-agency cooperation, etc.	Support is provided to collaborative R&D projects, commercialization of new and emerging technologies, creation of spin-off companies, venture and seed capital streams, incubators, and science and technology parks. UBC is enhanced by national research funding framework that promotes collaborative inter-institutional projects. Support is provided to investment in technology research, commercialization of R&D results, business innovation centres are linked to the universities. US universities have intellectual property rights.
German-speaking countries	German UBC system is characterized by shared responsibilities between the federal level and the states (Länder). UBC governance on the government level is based on dual ministerial approach. There are well-coordinated UBC support structures.	Support is provided to cutting-edge research, postgraduate schools for young scientists, clusters of excellence, collaborative R&D projects, commercialization of R&D results, start-up and spin-off companies, development of venture and seed capital streams, incubators, science and technology parks. Consistent

		public interventions are based on a shared national and institutional vision and a joint strategy.
Scandinavian countries	The UBC related public governance is based on dual ministerial governance, public R&D system is decentralized and a great degree of influence over priority setting still lies with the state universities and state university colleges. There are well-developed UBC support structures. UBC ecosystem is marked by a short geographical distance between universities and business.	Research policy focus is demand driven innovation, user-centred innovation service and support to entrepreneurship growth. Universities have the right to invention ownership. There is an extensive geographical network of universities along with their own regional units, various innovation platforms and incubators in many towns. A strong dimension is open, excellent and attractive research system. Universities have been increasingly setting up technology transfer offices and using science parks and incubators to develop relations with business. Industrial Ph.D. schemes enhance UBC.
Francophonic and Benelux countries	Several agencies form a sustainable public-private partnerships in order to implement open innovation, involving public research and foster knowledge transfer via UBC Research policy with innovation policy and UBC are delegated to the regions.	There are numerous public policy instruments that promote UBC, national and institutional strategies for UBC, internal and external institutional commitment. Incentives are provided to researchers to engage in UBC. Support structures include knowledge and/or technology transfer offices, valleys, science parks, etc.
Southern Europe	UBC governance is dominated by the public sector and marked by high degree of centralisation, quasi-federal R&D and innovation-related policies. The Parliament and the Government are at the top R&D and UBC policy. The national R&D and innovation priorities are set by the national and regional strategies.	UBC efforts are supported by tax credits for businesses financing university projects and employment of highly skilled employees. Higher education reforms opened up university governance to business. Recently industrial innovation projects have been launched to enhance UBC and build a critical mass of resources R&D. Public funds for UBC are included in the business leadership programmes.

Eastern Europe	UBC systems are still dominated by public funding and central governance. Recently R&D systems were undergoing governance reforms and the main elements include introduction of competitive and performance-oriented funding system and decentralization of science policy by new executive agencies.	Several policies were designed to support UBC governance including stimulation of incubators / science parks at universities, policies to support industrial liaison offices at universities, policies to support entrepreneurship at universities, policies to support corporate venturing, mobility schemes allowing Ph.D. students and researchers to carry out innovation projects in companies, etc. Regulations were endorsed which oblige public universities to guarantee that inventions are controlled by the universities and establish special purpose companies dealing with knowledge transfer or acting as parent companies for academic spin-offs, etc.

Source: developed by the author based on Global Competitiveness Report, 2014–2015, Global Competitiveness Report, 2013–2014, The State of University-Business Cooperation Report, Platform on Research and Innovation policies ERAWATCH, 2015.

Summary and discussion

To summarise, the European UBC ecosystem is still under development though recently it has become the public policy focus and measures have been introduced to enhance UBC following the examples and best practices in the USA and Canada. The UBC and innovation leaders in Europe are Anglo-Saxon, German-speaking and Scandinavian countries. Southern European and Central European countries are considered to be UBC and innovation followers though recently public policy and governance measures have been taken to introduce UBC support structures and measures. The most developed types of UBC in Europe are cooperation in and commercialisation of R&D results, academic staff and student inter-sectorial mobility, and entrepreneurship. The major drivers of UBC are relational (existence of mutual trust and commitment) and structural (employment of university staff and students in business, having a shared goals, and understanding of common interest by different shareholders). The major barriers to UBC are perceived to be lack of funding, limited awareness of business about university research activities/ offerings, limited awareness of universities about the benefits of UBC, heavy bureaucracy in universities, different understanding between university and business, etc.

4. UNIVERSITY AND BUSINESS COOPERATION GOVERNANCE IN LITHUANIA

4.1. Methodology: strategy and design

The aim of empirical research was to conduct critical analysis of UBC governance practice and propose possible development trends for Lithuanian UBC system. The logics of empirical research is presented in Figure 25.

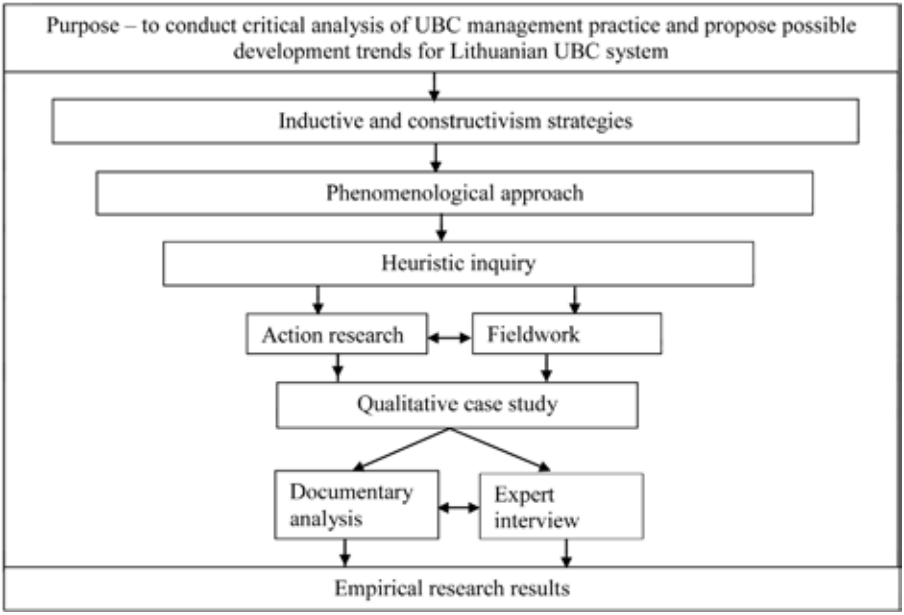


Figure 25. The logics of empirical research
(*Source*: developed by the author)

The empirical research was carried out by applying inductive strategy which is used in practice-related research. With regard to ontological consideration constructivism as social research strategy was chosen because it suggests that it is difficult, if not impossible, to find objective reality as it is only a social construct built up by the perceptions and actions of social actors (Bryman, 2008). Constructivism approach is especially relevant to the social sciences when "the researcher always presents a specific version of social reality, rather than the one that can be regarded as definitive" (Bryman, 2008, p. 19). Therefore, the empirical research was grounded on the presumption that the world is constructed the way people understand it meaning that there is no separate objective reality for UBC ecosystem participants except what they know their experience is and what it means to them (Patton, 2008). Another methodological presumption of the empirical research was that "the only way for us to really know what another person experiences, is to experience the phenomenon as directly as possible for ourselves" (Patton 2002, p. 106). The research strategy of constructivism

was chosen because it challenges the proposition that the category of UBC ecosystem is pre-given and suggests that its meaning is continually being accomplished, ever-changing, indeterminate, and in a constant state of revision by its participants.

The empirical research was also designed by applying the phenomenological approach to social cognition. Phenomenology, developed by a German philosopher E. Husserl in the beginning of the 20th century, aims to describe the content of human consciousness and reveal the essence of phenomena existing in it (Patton, 2002; Hammersley, 2011; Outhwaite, W. and Turner, 2007). It explores how people make sense of their experience and transform it into consciousness, individually and collectively. The explored phenomenon is UBC ecosystem governance which is made of universities, business companies, public governance and more importantly, the employees of these sectors. The empirical research focuses on what is the meaning, structure, and essence of the lived experience of UBC governance phenomenon for the UBC ecosystem participants? (Patton, 2002; Hammersley, 2011).

Furthermore, heuristic inquiry as a part of the phenomenological approach focusing on the personal experience and insights of the researcher was chosen for the following reasons. First, it raises the question "what is my experience of this phenomenon and the essential experience of others who also experience this phenomenon intensely?" (Patton, 2002 p. 107). Second, it is concerned "with meanings not measurements; with essence, not appearance; with quality, not quantity; with experience, not behaviour (Douglass and Moustakas, 1985:42)" as cited by Patton, 2008 p. 107). Third, it is built on the notion that discovery comes from being wide open to the research object. The process of heuristic enquiry is as follows, "beginning as series of subjective and developing into a systematic and definitive exposition (Douglas and Moustakas, 1985:40)" as cited by Patton 2002, p. 108). Although derived from phenomenology, the heuristic inquiry is different from phenomenology in the following ways. Phenomenology emphasizes detachment in analysing the experience while heuristic inquiry encourages relationship and connectedness. Phenomenology presents a distillation of the structures of experience while heuristic inquiry emphasizes "creative synthesis" of researcher's intuition and understanding of the phenomena. Phenomenology loses personal approach in the process of descriptive analysis while under heuristic inquiry research participants remain visible (Patton, 2002; Hammersley, 2011).

Following methodological literature advice, five basic phases of the "heuristic process of phenomenological analysis: immersion, incubation, illumination, explication and creative synthesis" (Patton, 2002, p. 487) were applied. Immersion included stepping into the content of UBC governance experience, questioning, dialoguing and indwelling. The next stage – incubation – was quiet contemplation, allowing space and time for thinking, intuitive and tacit insights. It was the time of clear and profound awareness of UBC governance experience and its meaning. The phase of illumination included expanding awareness, emergence of themes and patterns, formation of thought clusters. The next phase – explication – involved other added dimensions of meaning and further connections. The final stage – creative synthesis – included bringing together the pieces of the total fundamental richness of five-year experience in UBC ecosystem environment and qualitative synthesis (Patton, 2002). The final step was reporting the findings while balancing between description and interpretation.

An integrative approach to action and fieldwork research as knowledge acquisition method strategy was chosen because it is based on the principle to research by acting and to act by researching (Patton 2002). It refers to "a collaborative approach to research that provides people with the means to take systemic action in an effort to resolve specific problems" (Berg 2007, p. 224). Action research is aimed to improve the work with people or their groups, is widely accepted in management science and focuses on research methods that take into account interactive, practice-oriented activities (Berg 2007; Hammersley, 2011; Stringer, 2014;), as is the case of UBC governance. My major role as action researcher was to work "with and alongside the group or community under study, not outside as an objective observer or external consultant" (Berg 2007, p. 230). I also contributed research-based expertise on UBC governance as the participant of the process, cooperated with other stakeholders, served as a partner to the researched population (Berg 2007). Action research procedures included spiral activities: identifying research questions, collecting the information to answer them, analysing and interpreting the information and sharing the results with participants (Berg, 2007; Hammersley, 2011). In addition, the activities of action research process also can be described as to plan, act, observe and reflect (Kemmis and McTaggart, 1988 as cited by Berg 2007). Other researchers describe the process as look, think and act (Singer 1999 and Stringer and Dwyer's 2005, as cited by Berg 2007). The majority of action research are chosen in order to change or improve the research object. The major abstracted categories of action research are the following: 1) technical/ scientific/collaborative mode, 2) practical/mutual collaborative/deliberate mode and 3) emancipating / enhancing / critical science mode (Berg, 2007). Under the first mode "a researcher identifies a problem after collaborating with a practitioner and then provides information to this practitioner who facilitates its implementation" (Berg, 2007, p. 231). Under the second mode, a researcher and practitioner together identify the potential problems. "The goal of practical research is understanding practice and solving immediate problems (MCKernan, 1991, p. 20)" as cited by Berg, 2007, p. 232). The third mode of action research "promotes emancipatory praxis in the participating practitioners" (Berg, 2007, p. 232). As I was as a practitioner and a researcher, the second mode – practical / mutual collaborative/ deliberate – was chosen for this dissertational research.

Fieldwork research method was also chosen for this empirical research with regard to the integrative mode of my current and past work experience and current twofold position as a university research manager and a Ph.D. student. Fieldwork means "having direct and personal contact with people under study in their own environment – getting close to the people and situations being studied to personally understand the realities and minutiae of daily life"(Patton, 2002, p. 48). Fieldwork research method required intense and long-term observation of activities and interactions of participants of UBC ecosystem, hearing and reflecting on what university, business and public governance employees say, how do they behave and treat each other (Patton, 2002; Hammersley, 2011). Fieldwork research method developed from cultural anthropology and meant that a researcher had to immerse into the culture of the researched group of people. Researchers carrying out fieldwork research interview and observe people in their natural environment, participate in their life, observe and analyse documents to learn social structures of the organization or a network. Fieldwork research is an integrated method including semi-structured interviews, analysis of documents, case study (Burgess, 1995). A researcher engaged in the

fieldwork research can take one of four roles: participant, participant as observer, observer as participant and observer. In many cases, I took on the participant as observer role due to my twofold position as a university research manager and Ph.D. student. As a researcher and a practitioner, I had to constantly compare the received information with my personal experience and to view the observed reality from the position of a distant researcher and a participant of the UBC ecosystem at the same time.

The empirical research was carried out by implementing the principle of triangulation and integrating different qualitative research methods: documentary analysis and semi-structured in-depth expert interviews. Simple modelling and logical construction method were applied for the development of the conceptual normative model for UBC governance in Lithuania. Development of the conceptual normative model entailed two major stages: 1) priority setting based on where there are main areas in need of improvement and/or main areas where the potential for UBC lies; 2) process of drafting the conceptual normative model. In many ways, research validity is the most important question of research quality. It is "concerned with the integrity of the conclusions that are generated from a piece of research" (Bryman, 2008, p. 32). In qualitative research validity refers to context-boundedness and thick description, a researcher being a part of the researched world. The purpose of the semi-structured in-depth open-ended interview questions was "to understand and capture the point of view of other people without predetermining those points of view through prior selection of question naire categories" (Patton, 2002, p. 21).

The major advantages of the situation that I carried out research and at the same time implemented my duties as research manager at Mykolas Romeris University Research Centre's were the following:

1. Research Centre was responsible for initial preparation of research related university strategies, policy documents, development and implementation of university research reforms. As a member of the Research Centre, I constantly took part at different UBC ecosystem meetings and events that took place in Lithuania. I had access to primary data, could directly observe the behaviour and interact with UBC ecosystem participants at the institutional and national level. Research data collection and analysis was not separated from my daily activities, primary data could be constantly compared to organizational and management theories I was immersed into, I could suggest reform ideas that were often put into practice on a university level, evaluated and updated if necessary.
2. Research Centre was partly responsible for inter-institutional cooperation. As a researcher and practitioner, I had to take part in inter-institutional events, including meetings with academia, business and public governance, prepare cooperation agreements and observe the UBC ecosystem and the process development from inside and outside university, from "hands on" perspective. My five-year action and fieldwork research was constantly enriched by participation at different meetings and events on UBC organized by the Ministry of Economy of the Republic of Lithuania, the Ministry of Education and Science of the Republic of Lithuania, the Agency for Research, Innovation and Technology (MITA), the Research Council of Lithuania, Research and Higher Education Monitoring and Analysis Centre (MOSTA), other Lithuanian universities, etc. I used every opportunity to observe the behaviour, listen and talk to university academic and administrative staff, compare their thinking and behaviour with theo-

ries and reflect. Most often I introduced myself in twofold positions – as a university research manager and as a Ph.D. student.

3. Research Centre periodically participated in international partnerships and staff mobility events. To gain international experience and learn best practices on UBC governance, I used the opportunities provided by European mobility schemes Erasmus+, COST, etc. to visit foreign universities, valleys and innovation hubs, and to welcome research managers, researchers and university administrative staff at Mykolas Romeris University. I had numerous formal and informal conversations on UBC governance experience and practice from different European, American and Asian universities. During formal and informal meetings (coffee breaks or lunches) with research managers, researchers and Ph.D. students I talked how UBC is managed at their universities, how are they motivated to engage in UBC, what are the main drivers, barriers and benefits. My observations, information received, conversations with my colleagues from other European universities have greatly expanded and accumulated my knowledge and understanding of UBC governance practice.

The action and fieldwork research also revealed its disadvantages. The major disadvantages of the situation that I carried out research and at the same time implemented my duties as research manager at Mykolas Romeris University Research Centre's were the following:

1. Most often I introduced myself as a university research manager and a Ph.D. student. However, when I requested information for my research soon informants would start considering me as "belonging to their group" and conversations would expand to interesting and useful areas but not directly related to the dissertational research. It was also challenging to be a practitioner and a researcher at the same time.
2. In addition, the process of research data collection included information that could not be disclosed as research findings. As Lithuanian UBC ecosystem is not big, the same participants take part in different formal and informal meetings, usually know each other very well. Therefore, when carrying out research I had to be constantly cautious and not to provide any hints which could indicate the informant personality and, thus, violate the ethical principle of the empirical research anonymity.
3. Participation in UBC governance processes at Mykolas Romeris University made the action go before the research in many cases. For instance, the MRU LAB system aimed at UBC including infrastructural project and managerial system was launched in 2013 and consolidated in 2015. I unavoidably was on the leading part in designing and launching the system. The system was drafted with regard to my theoretical, methodological and empirical research on UBC governance.

4.2. Empirical research: setting and data collection methods

Documentary analysis of data and information collection methods was chosen for empirical research. Documented strategies, mission and vision statements, statutes, etc. constitute a particularly rich source of information about universities, business companies and public governance. UBC ecosystem players' especially public governance produce numerous documentary records. Thus, documentary strategy and technique were a part of the research and evaluation of the status quo (Patton, 2002). Documentary analysis was

carried out aiming to explore and compare official statements found in public documents – governmental programmes, national and institutional strategic agendas. They provided much information, including strategies, goals, measures and decisions regarding UBC. Learning to use, study and understand documents was a part of qualitative research. The stages of documentary analysis were the following: 1) data and information collection on UBC governance from publicly available sources, mostly available on the internet 2) cathegorising the documents and looking for patterns, similarities and differences, cause-effect relationships.

Interview method was also chosen for empirical research based on the assumption that it is noteworthy to know informant attitudes, evaluation and opinion or that the perspective of others is meaningful, knowable, and able to be made explicit. "We interview to find out what is in and on someone else mind, to gather their stories" (Patton 2002, p. 341). The purpose of the interview method was to enable researchers to enter into the informant's perspective and "to capture how those being interviewed view *their* world, to learn *their* terminology and judgements, and to capture the complexities of their individual perceptions and experiences" (Patton 2003, p. 348). Methodological literature also suggests that interview in a qualitative research is also an observation – a researcher not only hears what informant is saying, which is the main source of information but also can see how does he/she speak and behave. Thus, the interview method was chosen because of the following reasons: the information is received not only through verbal answers but also through emotional reactions, informants can be chosen according to their intellectual and experience level as well as attitude towards the subject matter, etc. (Patton, 2002).

The typology of interview method can be grouped according to the following criteria: formalization, objectives, type of informants, the number of informants, etc. According to formalization criteria, interviews can be classified into formal/informal, structured/unstructured, standardised/unstandardized interviews (Patton, 2002). The informal (unstructured, unstandardized) interview method was chosen for this dissertational empirical research as the method allowed me to go the direction that appeared interesting and noteworthy for the research out of conversation, provide spontaneous questions with regard to the emerging situation and, thus, gain valuable information and insights. In addition, as every informant could provide different information, the purpose of the interview was to collect the maximum information from different levels and different people.This method has also allowed me to disclose the unexpected and unforeseen aspects of UBC governance. Interviews can be also classified according to their objectives including opinion, attitude, evaluation interview aiming to disclose what people think regarding social reality events and phenomenon aiming to reconstruct certain social events and facts from the past (Patton, 2002). The approach allowed me to reconstruct the development of UBC cases from the time perspective. Furthermore, the interview can be classified with regard to the type of respondents including responsible persons' interviews, expert interviews, and representation of a certain social group. Expert interview typology, referring to persons that have the most competence in the field and the most reliable information on the research subject due to their professional and life experience was chosen for this dissertation. Expert interview method was chosen because this group of informants could provide the most insights relevant to this dissertation based on their overall knowledge that emerges

out of long-term work experience in the field. In addition, as the typology of interviews can be categorized according to the number of informants including individual, dyad or group interviews (Patton, 2002), this dissertational research included individual and dyad interviews though the majority of them were individual. The process of the expert interview in depicted in Figure 26.

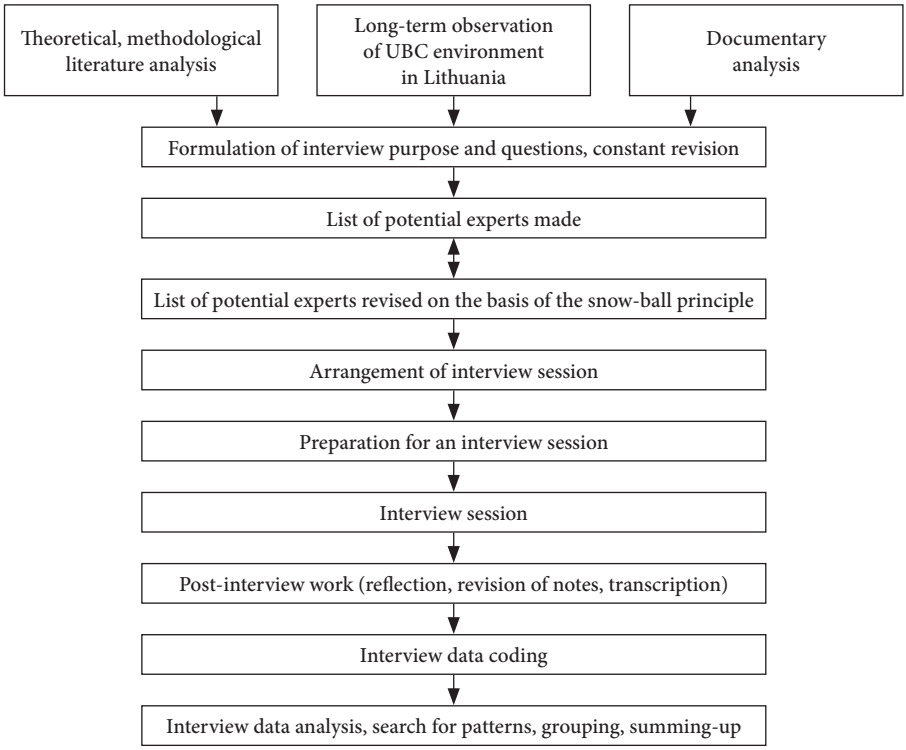


Figure 26. Expert interview process
(*Source*: developed by the author)

15 in depth semi-structured interviews with experts who have working experience or/ and scientific expertise in the field of UBC were taken. As the narration is a main form of communication including formal organization, narratives of experts were collected, recorded, transcribed and analysed. Universities and business companies have many stories in circulation that told me a lot about the nature and functions of selected universities, business companies and public governance institutions, their norms and practices, emotional atmosphere, powers and resistance (Czarniawska, 2004). Expert interviews were taken and compared for analyses and synthesis, differences and similarities. They allowed me to evaluate the situation and identify gaps and potential for UBC governance on the national and institutional levels.

Interview method peculiarities applied before the session

After five-year observation of UBC governance environment in Lithuania and documentary analysis, interview purpose and questions were established in 2013. Every year I would come back to the questionnaire, update and revise it. The interview sessions took place in spring-autumn 2015. Some informants were chosen after observing UBC environment. They were the people visible in the media, speaking at various UBC-related meeting and events, in charge of UBC policy formation in Lithuania. Other informants were selected on the snowball principle. When participating in different events or meeting, I would observe the situation, speakers or group discussion dynamics, and select potential informants who, in my opinion, could provide useful information and insights. Thus, some of research informants were selected occasionally after observing his/her talk, behaviour and opinion in a certain event. Usually, I would approach the potential informant, introduce myself, ask for an interview and together we would set the appointment for an interview session. Most often initial face-to-face contact was used. In some cases, however, I would call an informant by telephone or write him/her an e-mail but these methods were not the most efficient. Some of the potential informants I approached did not respond to my e-mails. I would repeat the message for the second and third time and if the potential interviewee did not respond, I would "let him/her go". After each session, I would ask the informant(s) for their recommendations whom should I approach and who, in their opinion, would provide me valuable information and new insights.

Experts were selected according to the following criteria: 1. Long-term (more than 5 years) work experience in university governance (different fields of science), 2. Long-term (more than 5 years) work experience in business management (different sectors of the economy), 3. Long-term (more than 5 years) experience in UBC related public governance, 4. Work experience in both sectors and/or associations, forums, etc. uniting universities and business, 5. Visibility in the public (media, workgroups, events, etc.), 6. Contribution to UBC reforms, 7. Potential impact on UBC reforms.

Table 11. Expert body composition

	Work experience in university governance	**Work experience in business governance**	**Work experience in UBC related public governance**	**Work experience in both sectors and/or associations, forums, etc.**
Located in major cities Vilnius	3	5	2	4
Located in regions	3	2	0	1
Total	6	7	2	5

Source: developed by the author

Aiming to provide the most natural and usual environment in which an informant feels the most comfortable and save his/her time, I would suggest arranging a meeting in his/her office. Some of the interviews took place in cafeterias or other public spaces. When preparing for the interview, I also planned to make them at the end of weekday as

informants then are more relaxed and can focus on interview questions. Some respondents, however, would set an appointment early Monday morning, before starting a week work. The planned duration of the interview was about 30 minutes. I would inform the informants about the preliminary duration and checked the timing during the interview session. In practice the interview sessions ranged from 20 minutes to 80 minutes, in many cases, informants prolonged the timing at their own initiative.

Ethical principles including volunteer answering, anonymity, and confidentiality were strictly regarded when carrying out empirical research. Research objectives and potential benefit of the research were explained to informants, they had a free choice whether to take part or not to take part in the interview. When empirical research data was analysed the principles of informant anonymity and personal data confidentiality were kept. Generalized data was presented that was used only for research purposes and not provided to the third parties.

Interview method peculiarities applied during and after the session

During an interview session, I would introduce myself and the university I represent. Usually, I would tell that I am a Ph.D. student and a research manager at the same time. Then I would thank the informant(s) for his/her time and willingness to give an interview, introduced the subject matter, purpose of my research and expectations, and explained ethical principles of the research and my commitment to keep them. Then I would normally ask informant to introduce himself/herself and the area he/she worked in – university, business or public governance institution.

I also requested informants about the possibility of audio recording the interview session to get the maximum efficiency and preciseness of the interview method. The majority of respondents agreed to be audio recorded. While listening to the informant, I also made some notes on the course of the interview, characteristics of the informant, language peculiarities, personality traits, etc. in my research diary. The major advantage of this method was comprehensiveness of data and information. About 10–15 semi-structured, open-ended questions were asked during the interview sessions, depending on a situation (Annex 1). This method allowed changing the order of questions if situation suggested that. During the interview session, I was aware that informants may feel worry and threat to their image (in the event confidential information is revealed), disclose only positive information and avoid unsuccessful cases. Knowing that I tried to build mutual trust and commitment and reassure that information received during the interview session will not be disclosed for the ethical purposes.

Aiming to receive maximum benefit of interview session I tried to follow the methodological advice of inquiry found in the literature: to ask clear open-ended questions, one question at a time (Patton, 2002). In the beginning I would ask informants to share experience and facts and then their opinion. Also, I tried to keep the funnelling technique of consistent order of questions: from general to specific, from broad to narrow. In addition, I used the technique of probe: asked to provide examples and details, tried to use body language to indicate support, recognition and understanding (Patton, 2002). I also rephrased the question when noticed that an informant did not understand it exactly or that his/her answer deviated from my question. Moreover, I tried to control the situation calmly by allowing the informant to speak as he /she wants to speak, to be fluent and express ideas, opinion his / her way (Patton 2002). Finally, following methodological

literature advice I would ask the closing question: "That covers the issues I wanted to ask. Is there anything you would like to add?"

Interview method peculiarities applied after the session

After the interview session, I would make an immediate post-interview review to record details about the setting and my observations. I transcribed the data and information received as soon as I could so that to secure the maximum exactness of information. Data gathered from informal conversational interviews was considered different for each person because each person was understood as the unique informant with his/her unique perspective (Patton, 2002). Also, I compared the transcription with my notes, reflected and elaborated on them, and made notes in my research diary. The exert body composition was encoded and a scoreboard of expert attitude distribution was developed (Annex 2) after a careful examination of interview data, search for patterns, grouping, and summing-up.

4.3. UBC case study in Lithuania: description and analysis

Lithuania has a unique context of UBC development. The Restoration of Independence in the 1990s has gradually changed innovation and UBC landscape. During the last twenty-five years Lithuania has transformed its economic system from socialist to market economies though the process was rather complex. Although market mentality was spreading in Lithuanian society, UBC was not at the core of the discourse in the academia and society. Business sector and universities continued to operate in different realms, were reluctant to go into cooperation for innovation, and UBC was not a national policy focus. Business transformations, the decline of economy and redeployment has changed the UBC geography causing companies to decline in expenditure. The situation gradually changed during the last decade. Universities faced the reform of higher education that was influenced by the shift from Conventional or Mode 1 approach to Corporate or Mode 2 approach. The basic funding for universities started to decrease and competitive funding schemes were introduced. Business companies started to turn to public universities for innovation. UBC has emerged as a policy focus in the academic and public discourse. Innovation policy and UBC has rapidly grown in importance. The breakthrough was achieved after the Government has made a decision to allocate up to 10% of the total EU structural funding for 2007–2013 to research. UBC enhancing national schemes such as valleys and clusters with investment from the national budget and structural funds for the period of 2007–2013 were introduced. Furthermore, in 2010 the Government put an emphasis on UBC by approving Lithuanian Innovation Strategy for 2010–2020, establishing the Science, Technology and Innovation Agency and allocating money for collaborative projects between universities and business.

Several international policy rankings and reports have analysed UBC systems in Lithuania and benchmarked it with other countries. For example, the data of the Global Competitiveness Report 2014–2015 show that according to the indicator 'university and business collaboration in R&D' Lithuania ranked 27th among 144 countries (Global Competitiveness Report, 2014–2015, p. 250) and according to the Global Competitiveness Report 2013–2014 it was 28th among 148 countries of the world (Global Competitiveness Report 2013–2014, p. 256). According to the indicator 'company spending on R&D' Lithuania ranked 63th position in 2014–2015 and 2013–1014. The indicator 'the quality of

scientific research institutions' has placed the country in the 32nd position while according to the indicator 'availability of scientists and engineers' the country appeared in the 61st position in 2013–2014 and 2014–2015 (Global Competitiveness Report 2014–2015, p. 250; Global Competitiveness Report 2013–2014, p. 256).

In addition, the European Commission's platform ERAWATCH provided a benchmarking analysis on research and innovation policies and systems in different European countries. Some of the data and insights are related to the UBC system in Lithuania and noteworthy to brief in the context of this dissertational research. For example, it concluded that Lithuania has "the stable low-medium tech-dominated structure of private knowledge demand, low numbers of newly created knowledge-intensive companies and a low rate of entrepreneurship" (Platform on Research and Innovation policies ERAWATCH, 2015). Furthermore, the platform indicates that although the country is among the leading EU-27 countries in university graduates and especially in science and education, "the country lags substantially behind both the leading and the catching up EU-27 countries with regard to the capacity to produce and commercialise knowledge" (Platform on Research and Innovation policies ERAWATCH, 2015).

The major stakeholders of UBC ecosystem include universities (faculties, departments, laboratories, individual researchers, students), business (including industry, SMEs, business associations, venture capital companies, banks, free-lancers, business company employees), public governance institutions (Parliament, Government, ministries and agencies, public servants, etc.) and the general society representatives (citizens, NGOs, communities, consumer organisations, etc.).

The UBC ecosystem including the main institutions and functions in Lithuania is depicted in Figure 27.

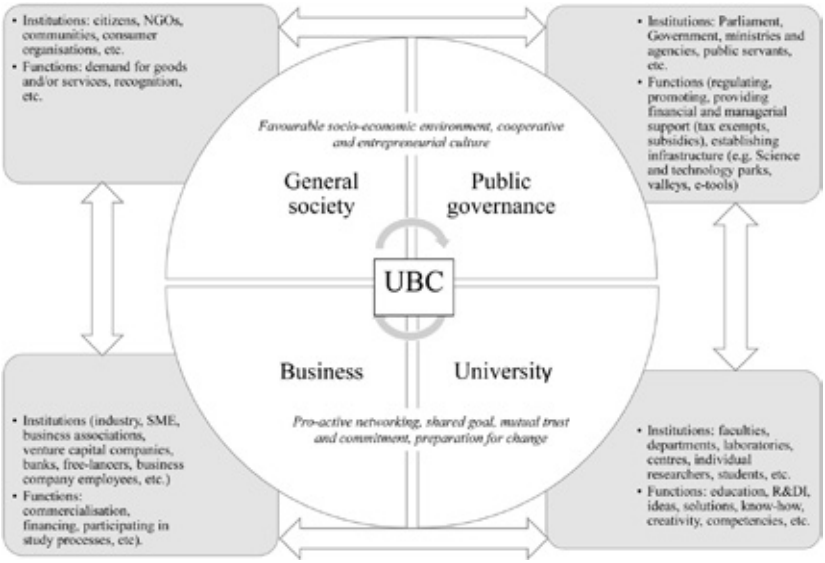


Figure 27. UBC ecosystem structure in Lithuania
(*Source*: developed by the author)

At the policy formation level, Lithuanian UBC support structure is regulated by the Lithuanian Parliament (Seimas) and the Government. The Research Council of Lithuania serves as an advisory agency to the Parliament and Government is in charge of the evaluation of institutional research performance and provides competitive research funding in the form of projects. It is not directly responsible for UBC implementation but the element is included in the research performance assessment methodology. The Research Council of Lithuania administers the process of research performance assessment. The Lithuanian Academy of Sciences serves as an independent expert and consultant agency to the Parliament and the Government in research and higher education, culture, social development, economy, environmental protection, health care, technology, etc. (Lithuanian Academy of Science official website, 2015). UBC is not the focus of the activities of the Lithuanian Academy of Science and it does not play a crucial role in promoting UBC though its position of different research policy issues is well respected in the society.

On the ministerial level, UBC policy formation is based on the dual ministry model: the Ministry of Economy that is in charge of innovation and business, and the Ministry of Education and Science that is responsible for higher education. The Ministry of Economy is the primary institution involved in the promotion of innovation and business environment development including UBC. The Agency for Science, Innovation and Technology (MITA) under the Ministry of Economy serves as the primary institution promoting UBC and administers a number of programmes and measures aimed at UBC and innovation development. The Ministry of Finance plays a key role in allocating funding for societal priorities and recently has become vital in allocating budgetary funding for UBC. Other agencies including Lithuanian Business Support Agency (LVPA), European Social Fund Agency (ESFA), and Central Project Management Agency (CPVA) are responsible for R&DI funding from EU structural funds, and, thus, also covers UBC activities to a certain degree. Other institutions are in charge of regulating the field and/or providing specific services related to UBC. For example, Enterprise Lithuania is responsible for entrepreneurship as well as export development, the agency Invest Lithuania is responsible for attracting investment. In addition, Lithuanian Innovation Centre provides support services to higher education institutions and business companies and its strategic goal is „to increase Lithuanian international competitiveness by stimulating innovations in business. This goal is divided into the following objectives: to foster capabilities of the companies to develop and implement innovations; to accelerate commercialization of achievements of advanced sciences; to decrease the risk of innovation implementation" (Lithuanian Innovation Centre official website, 2015).

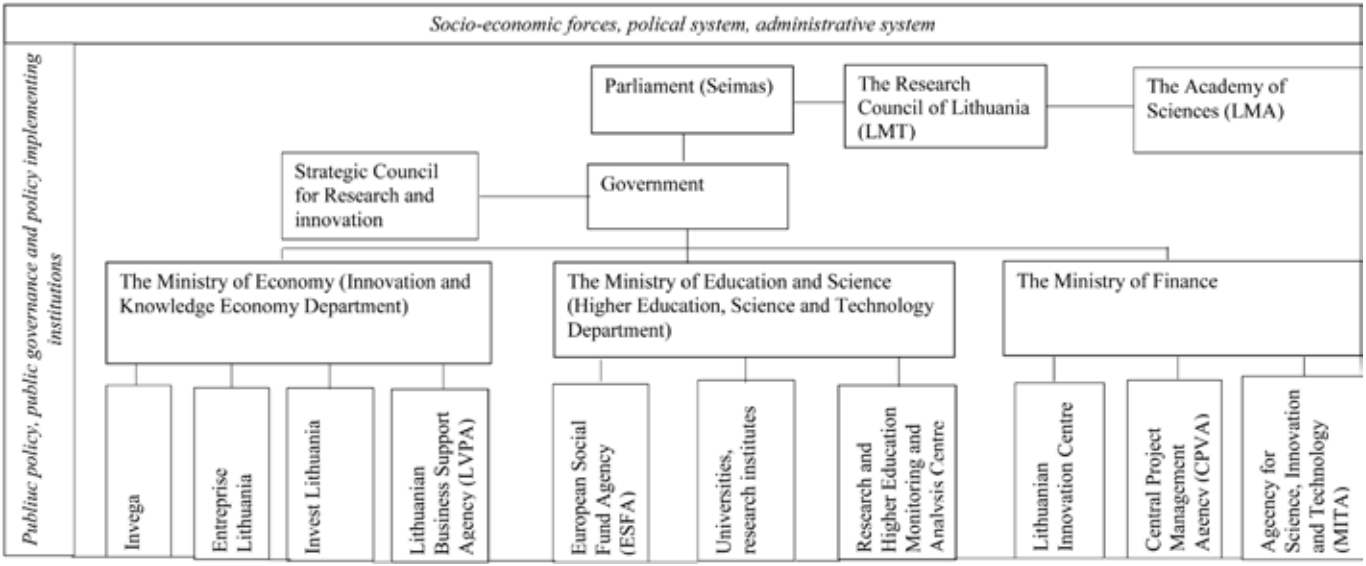


Figure 28. UBC enhancing public governance structure in Lithuania
(*Source*: developed by the author)

Lithuania has a well developed legal basis for UBC. The legal framework for UBC governance on the national level is embedded in the following strategic documents.

1. Resolution of Seimas of the Republic of Lithuania. Long-term Development Strategy of the State. 12 November 2002, No. IX-1187. It promotes interaction between science and business, expansion of applied research, financing of R&DI by tenders. The strategy also establishes priorities for business development which are based on science, knowledge and high technologies. Knowledge-based industrial development directions are recognised as priorities. In addition, the strategy promotes the creation of economic development centres such as business incubators, science and technology parks and other institutional environment structures for UBC.

2. Resolution of the Government of the Republic of Lithuania. Lithuanian Innovation Strategy for the Year 2010-2020. February 17, 2010. No. 163. Vilnius. The strategy is aimed to create conditions for the development of innovation and entrepreneurial culture in Lithuania and its main objectives are the following: to accelerate Lithuania's integration into the global market ("Lithuania without borders"); to educate a creative and innovative society; to develop broad-based innovation; to implement a systematic approach to innovation (The Ministry of the Economy of the Republic of Lithuania official website). "The purpose of this strategy is to mobilize and manage state resources effectively: to create competitive knowledge economy based on the latest technologies and qualified human resources." (Article 1). The strategy also establishes a long-term vision: "basis of the Lithuanian economy is the production of high added value products and services; its competitiveness in the global market will be determined by environment favourable for innovative business; the system of education, science, research and development, interaction with business will help to educate a creative society and will create high-level knowledge base for novelties" (Article 21). In addition, the Strategy presents SWOT analysis of Lithuanian UBC and innovation ecosystem which is depicted in Table 12.

Table 12. SWOT analysis of Lithuanian UBC and innovation ecosystem

Strengths	Weaknesses
Expenses for research of public sector in the year 2000–2007 increased up to 37.29 percent of GDP and now almost reach the EU average. A number of R&D employees do not lag behind the EU average much. Increase of export potential and extent in recent years. Close economic relations with other EU countries and countries, belonging to the European Economic Area.	Few companies develop innovation; their research and abilities of (technological) development and innovation are not sufficient; The hierarchical closeness of higher education and research institutions, the unattractive structure of salaries and few career possibilities do not allow young talented people join these institutions and encourage brain drain. Business sector invests in R&D too little. There are too few R&D employees in business, especially in high-technology industry.

Lithuania is the leading country among EU member states according to a number of inhabitants, having higher or post-secondary education, and a number of persons (aged 20–29), who have specialities in social and engineering sciences and humanities. A lot of Lithuanian citizens studied, obtained an academic degree, underwent a period of training and obtained unique professional experience in international education institutions and private companies in the last two decades.	Innovation system is fragmented; internal relations among participants of innovation system are poor. According to security indicators of industrial property (a number of patents and design), Lithuania lags behind the average of EU countries much. Infrastructure of research is fragmented; a part of infrastructure does not correspond to the requirements of today.
Reliefs of corporate income tax for enterprises that invest in R&D and technological renewal were approved. The infrastructure of telecommunication and services of the information society (RAIN, e. signature, 3.5 G and high penetration of mobile connection) was developed.	Inter-institutional activities aimed at development of science and business cooperation and implementation of purposeful innovation policy are poorly coordinated; there is no institution that is directly responsible for development of science and business cooperation.
Opportunities	**Threats**
Law on Science and Studies of the Republic of Lithuania (Official Gazette, 2009, No. 54-2140) passed in 2009 allows to solve questions of intellectual property, finance research on the programme competitive basis and encourage scientists to undertake applied research. Approved joint research programmes will enable the coordination of research development and ensure proper use of EU structural funds. Implementing programmes of science, studies and business centres (valleys), science potential and financial and scientific resources are concentrated via integration of research institutes and infrastructure, which will work according to principle of open access, is renewed. Increase of extent of joint project activities implemented by EU companies and education institutions will allow using financial and intellectual EU resources better and take over experience of innovation dissemination.	Lithuania does not withstand international competition; therefore, the most talented students, doctoral students and scientists leave Lithuania. A lack of strategic (long-term) innovation. Political instability and political decisions made are often inconsistent. Strong and constantly developed R&D and innovation infrastructure, stable policy and financial resources in developed neighbour states may reduce advantage of innovation system created in Lithuania in competition for business innovation. Low quality of research and technological development and narrow application of their results in business may increase present problems of enterprise competitiveness and raise new problems.

Demand for products, having higher added value, is growing. Enterprises will join international clusters which will promote development of innovation activity. Participation in international research and (technological) development programmes. EU financial support for business innovation in the year 2007–2013 is provided. Intellectual potential is concentrated in business sectors open to science; private and public R&D infrastructure is formed and developed. Foreign direct investment is developed and technologies are adopted; patent rights and licences are acquired, scientific or production experience and unpatented know-how are drawn.	Qualified labour force, which is getting more expensive, may encourage the best pupils of general education school to choose popular specialities and reduce popularity of engineering and natural sciences; in this way, supply of qualified labour force for potential investors would decrease as well. Growth of R&D and innovation sector and economy competitiveness in Brazil, Russia, India, China and other Asian countries. Decline of international competitiveness of Lithuanian enterprises.

Source: Lithuanian Innovation Strategy for the Year 2010–2020, 2010, p. 5–6.

In addition, the authors of the Lithuanian Strategy for the Year 2010–2020 suggest that "20. Considering the discussed condition of innovation and performed SWOT analysis, attention in this strategy is mostly paid to the following major problems, which directly affect innovation of Lithuania:
20.1. Too low quality of human resources and material facilities.
20.2. A lack of creativity and entrepreneurship in private and public sectors.
20.3. A lack of systematic approach to innovation, poor culture of inter-institutional cooperation and a lack of cooperation traditions between business and science" (Lithuanian Innovation Strategy for the Year 2010–2020, 2010, p. 6).

The SWOT analysis suggests that Lithuania has a well-developed UBC infrastructure, legal and tax system, sufficient critical mass of highly educated and R&D personnel, promising UBC support structure including financing possibilities from national and international public funds, expanding demand for added value products and opportunities provided by external markets. The major challenges to UBC include low level of business innovation capacities, hierarchical closeness of universities, poor UBC traditions, insufficient motivation systems for researchers and business sector employees to cooperate, and lack of coordination responsibility from public governance side. Therefore, the SWOT analysis indicates the following areas that need to be taken into consideration when developing a conceptual normative model for UBC governance in Lithuania: external and internal national and institutional environment, the quality of RD&I and studies, university and business leadership attitude toward UBC, institutional

and individual engagement in UBC support structures, UBC related performance measurement and preparation for change.

To sum it up, the Lithuanian Strategy for the Year 2010–2020 provides a realistic analysis of status quo and future tendencies including developmental directions and possible interferences of UBC system in Lithuania. It highlights the major elements of the functioning UBC ecosystem including available resources (human, financial, infrastructural, etc.), covers the national mentality and disposition towards UBC, support structures. It emphasizes the level of innovation development, entrepreneurship, inter-institutional and inter-sectorial cooperation.

3. *Resolution of the Government of the Republic of Lithuania. The Lithuanian Innovation Development Programme 2014–2020. December 18, 2013. No. 1281*. It aims to "mobilise the state resources for the improvement of Lithuania's innovativeness and development of the competitive economy based on high-level knowledge, high technologies, qualified human resources and smart specialisation" (The Lithuanian Innovation Development Programme 2014–2020, 2013, p. 1). The programme sets four objectives: 1) Educate innovative society by developing new knowledge and its application 2) Increase business innovation potential by promoting business R&D investment; 3) *Promote science-business collaboration,* clusters' development and global cooperation; 4) Establish more effective innovation policy and public sector innovations. The Programme also suggests that "Lithuania's relative strengths lie in human resources and finance and support…High growth is also observed for non-R&D innovation expenditures and income from community trademarks and licenses and patents abroad…The gap between Lithuania and EU average in the area of innovations is mostly predetermined *by the lack of openness, excellence and attractiveness of research system, the small number of patent applications, the small number of doctoral graduates from third countries, the insufficient amount of R&D investments of businesses*" (Article 10). The objectives and targets of the Programme are presened in Table 13.

Table 13. Objectives and targets of the Lithuanian Innovation and Development programme 2014–2020

The first objective of the Programmeis to develop innovative society by developing new knowledge and its application.	Target 1 of the first objective of the Programme is to develop high-level knowledge, and research and development activities.
	Target 2 of the first objective of the Programme is to develop creativeness, entrepreneurship, innovativeness and practical skills and qualification corresponding to market needs within the system of higher education and science.
	Target 3 of the first objective of the Programme is to promote the development of innovative business, creating favourable conditions and providing knowledge about the start of innovative business.

The second objective of the Programmeis to enhance innovation potential of business.	Target 1 of the second objective of the Programme is to promote investments in activities delivering high added-value.
	Target 2 of the second objective of the Programme is to promote the introduction of new products to the market.
	Target 3 of the second objective of the Programme is to promote the cooperation between different sectors by creating innovations and developing innovations of high impact.
The third objective of the Programmeis to promote the cooperation by creation of value networking, development and internationalization.	Target 1 of the third objective of the Programme is to promote cooperation between business and science and transfer of knowledge and technology.
	Target 2 of the third objective of the Programme is to promote the development of clusters and integration in the global value chains.
The fourth objective of the Programmeis to increase efficiency of innovation policy-making and implementation and promote innovation in the public sector.	Target 1 of the fourth objective of the Programme is to create regulatory environment promoting innovations and to improve the institutional framework for the formation and implementation of the innovation policy.
	Target 2 of the fourth objective of the Programme is to create measures stimulating the demand for innovations that help to address social, economic and environmental challenges.

Source: The Lithuanian Innovation and Development programme 2014–2020, 2013, p. 23.

The Programme also suggests that "in order to ensure the international competitiveness, it is necessary to *develop the interaction between business enterprises and institutions of education and studies and RDI system*, encourage their integration into the global value chains providing access to the global resources of knowledge and ideas. *Insufficient cooperation between business and science hinders the concentration of the existing potential of the sectors* of economy and RDI, distinguishing the available advantages and employing them for the creation of higher value added" (The Lithuanian Innovation Development Programme for 2014–2020, 2013, p. 12).

In addition, the Programme evaluates UBC situation in Lithuania: "Although the situation is improving, *the collaboration between companies and institutions of research and studies is still inefficient*. Because of insufficient cooperation between the participants of the system of science, business and studies, knowledge necessary for the development of n*ew products or innovations do not reach the companies and researchers from the 13 institutions of science and studies lack skills necessary for the assessment of business needs*. Researchers from the public sector possess very scarce information about the possibilities of commercialisation of results of scientific research, and have insufficient technology transfer skills and knowledge for starting business" (The Lithuanian Innovation Development Programme for 2014–2020, 2013, p. 12).

Furthermore, the Programme suggests that higher education institutions lack competence and skills and external assistance on the development of innovative products while SME's lack financial resources for R&D activities and employment of researchers. The authors of the Programme conclude that "the gap emerges in *the whole cycle of innovation – from the idea to its implementation in the market – due to low cooperation between business and science and poor implementation of research results in the market*". As a solution to the problem the authors of the Programme propose to enhance cooperation between different governmental bodies responsible for the promotion of innovation (The Lithuanian Innovation Development Programme for 2014–2020, 2013, p. 13).

Under the governmental initiative, measures have been taken to form UBC. For instance, five integrated science, studies and business centres have been established aiming to capitalise R&DI infrastructure and human resources potential, providing opportunities to network, and synergy and value creation. However, the research results indicate that the valleys do not prompt UBC cooperation. For instance, the Study on Cluster carried out by the Association Knowledge Economy Forum in 2012 cited by the Programme authors has concluded that "*the services provided by valleys are inconsistent with business needs, they do not attempt to create the value added for business, are unmotivated to attract the business sector and are focused only on serving the interests of research*" (The Lithuanian Innovation Development Programme for 2014–2020, 2013, p. 13).

Furthermore, the Programme authors believe that R&DI infrastructure of valleys should guarantee the end-to-end cycle of innovations and that the Ministry of Economy and the Ministry of Education and Science should coordinate their investment in the infrastructure of valleys bearing in mind the needs of research and business. They also suggest that valleys' centres should provide conditions for creation, testing, pilot production and entry into the market of prototypes and models.

In addition, the Programme authors provide recommendations regarding science and technology parks and technology centres. They bring forward an idea of training and employing UBC mediators that have competence and know-how of technology transfer and functioning, coherent and effective system of innovations. They also recommend that activities of science and technology parks should be coordinated, targeted at high-quality services and attracting business to valleys. Priority should be given to the following areas: "development of innovative business, promotion of the culture of innovations, technology transfer services, business consulting services, promotion of networking and services of incubation of innovative enterprises" (The Lithuanian Innovation Development Programme for 2014–2020, 2013, p. 14). Another suggested function for science and technology parks is recommended to be development, mediation and facilitation of clusters in valleys.

4. *The National Progress Strategy Lithuania 2030. 15 May, 2012 No. XI-2015. Vilnius. The National Progress Strategy Lithuania 2030* is the future vision of Lithuania. The Strategy defines a long-term vision for Lithuania prioritizing in three key areas: Smart Economy, Smart Society and Smart Governance. It was created on the basis of inclusive society approach by consolidating ideas of over 1000 active citizens, communities and non-governmental organisations. In May 2012, the documents were approved by the Parliament (Seimas). The Strategy is aimed to promote "fundamental changes in society and to facilitate the formation of a creative, responsible and open personality" (The National Progress Strategy Lithuania 2030, 2012, p. 6). It is expected that by 2030 changes

in Lithuania will take place in the following areas: smart society ("happy society that is open to the ideas of each citizen, to innovations and challenges, demonstrating solidarity, self-governance and political maturity" (The National Progress Strategy Lithuania 2030, 2012, p. 8), smart economy ("economy that is flexible and able to compete globally generating high added value, based on knowledge, innovations, entrepreneurship and social responsibility as well as "green" growth", (The National Progress Strategy Lithuania 2030, 2012, p. 8), and smart governance "that is open and participatory, delivering, meeting public demands and ensuring high quality service as well as competent government able to take targeted strategic decisions" (The National Progress Strategy Lithuania 2030, 2012, p. 8). Furthermore, it is envisaged that Lithuania will be a learning society. "Lithuanian people are educated, interested in science and innovations, easy and familiar with the latest technologies. Lithuania enables productive *interaction between science and business*" (The National Progress Strategy Lithuania 2030, 2012, p. 11)

5. Law on Higher Education and Research of the Republic of Lithuania. 30 April 2009 No XI-242. Vilnius (last amended on 5 June 2014 – No XII-924). The Law prescribed the mission of the higher education "to help ensure the country's public, cultural and economic prosperity, provide support and impetus for a full life of every citizen of the Republic of Lithuania, and satisfy the natural thirst for knowledge" (Law on Higher Education and Research of the Republic of Lithuania, 2009, p. 1). It suggests that national higher education and research policy is formed by the Seimas.The Law also designates the institutions forming and implementing higher education and research policy. Article 12 of the Law also establishes the Agency for Science, Innovation and Technology (MITA) the mission of which is to coordinate the participation of Lithuanian establishments, enterprises, organisations and persons in international research programmes and projects, *implement a policy of research and experimental (social, cultural) development necessary for the development of innovations, the emergence of new technologies,* carry out coordination of the implementation, administering, evaluation and funding of related programmes and measures" (Law on Higher Education and Research of the Republic of Lithuania, 2009, p. 10).

Article 15 of the Law regulates science and technology parks. According to the Law the main functions of a science and technology park "shall be to stimulate *processes of scientific knowledge communication and technology dissemination, to create conditions for commercializing research results, to foster relations between science and business*, and to promote a culture of innovations. Science and technology parks shall create *favourable conditions for the establishment of enterprises which will carry out applied research and experimental (social, cultural) development works, and implement innovations*." (Law on Higher Education and Research of the Republic of Lithuania, 2009, p. 11).

In addition, Article 16 regulates the operation of integrated science, studies and business centres (valleys). According to the Law "integrated science, studies and business centres (valleys) shall be established to *concentrate the business potential open to research, studies and knowledge*. Integrated science, studies and business centres (valleys) must have *a common or related infrastructure* and purposefully contribute to the creation of the knowledge society and the knowledge economy, strengthening of competitive ability of Lithuania" (Law on Higher Education and Research of the Republic of Lithuania, 2009, p. 12).

6. *Resolution of the Government of the Republic of Lithuania. The Programme on the Implementation of the Priority Areas of Research and (Socio-Cultural) Development and Innovation (Smart Specialisation) and their Priorities. April 30, 2014. No 411.*

The authors of the Programme set the ultimate goal: "to increase the impact of high value added, knowledge-intensive and highly-qualified-labour-intensive economic activities on the GDP and structural changes of the economy by means of the R&D and innovation decisions". The objectives are the following: "create innovative technologies, products, processes and/or methods and, using the outputs of these activities, respond to global trends and long-term national challenges; increase competitiveness of Lithuanian legal entities and their opportunities for establishing in global markets – *commercialization of knowledge created* in the implementation of the R&D and innovation priorities as well as knowledge created in developing the R&D and innovation priority areas otherwise and using the unique synergy arising from *the collaboration of science and businesses*, economic entities and other public and private sector entities. The Programme envisages the following 6 thematic priority areas: Energy and a sustainable environment; Inclusive and creative society; Agro-innovation and food technologies; New production processes, materials and technologies; Health technologies and biotechnologies; Transport, logistic and information and communication technologies.

Lithuania has a well-developed infrastructure for UBC and innovation development. Currently, 5 integrated science, studies and business centres (valleys) operate in major Lithuanian cities: Vilnius, Kaunas, and Klaipeda. The country has invested almost 3 million euros in the development of valley infrastructure from the EU structural funds under the measure Inogeb-LT-2 in 2007–2013. Moreover, 9 science and technology parks and 4 industrial parks having all necessary infrastructure and tax incentives operate in Lithuanian regions offering the favourable environment for UBC. Lithuania's two free economic zones are located in the country's economically important centres and provide benevolent conditions for UBC by offering physical and/or legal infrastructure, support services, and tax incentives. In addition, in 2007–2013 approximately 60 million euros was allocated to the infrastructure and capacity building of clusters (The Ministry of Economy of the Republic of Lithuania official website).

Science, studies and business centres (valleys) provide networking and UBC possibilities. They are specialized in the following areas: "laser and light technologies, nanotechnologies, semiconductor physics, electronics and organic electronics, civil engineering, biotechnology, bio-pharmacy, molecular medicine, ecosystems and safe environment, sustainable chemistry and bio-pharmacy, mechatronics and biomedical engineering, energy, information and communication technologies, agriculture, forestry, food scientific research, marine business, as well as natural resources and environmental protection" (The Ministry of Economy of the Republic of Lithuania official website). The valleys not only provide sufficient and well-equipped office space but also access to R&D infrastructure, and networking possibilities. Furthermore, clusters are one of the priorities of business and UBC development in Lithuania. Although they are in early stage of development, there are some clusters that successfully operate and have the high potential for development. The infrastructure of clusters can also serve as a networking space for UBC. SMEs networks and associations also serve as a vehicle for UBC.

Policies to support entrepreneurship in universities and inter-sectorial mobility

schemes operate in Lithuania. For instance, National Youth Entrepreneurship Training and Development Programme 2008–2012 was approved including measures to integrate entrepreneurship training in the curricula of high schools, analyse and monitor entrepreneurship climate in Lithuania. In 2012 initiative of the commercialisation of R&D results were launched in the framework of High Technology Development Programme aiming to encourage researchers and students to establish start-up and spin-off companies. Furthermore, measures to make a career of researchers more attractive were introduced. For instance, to provide the measures for inter-sectoral mobility, the measure Employment of Researchers in Business was introduced. Under this measure, companies can receive compensations of salaries of researchers up to three years.

Policies to support corporate venturing and business access to finance were launched. For instance, risk capital fund Business Angels Fund was launched for investment into innovative and export- oriented companies. The Fund invests in partnership on the equal basis with a Business Angel, that is a company or individual who invests his funds into selected company and shares his personal experience with management of the company.

Furthermore, to promote the development of small and medium size enterprises by providing access to financial sources, knowledge transfer and R&D commercialisation the Investment and Business Guarantees (INVEGA) under the Ministry of Economy was launched and provides funding for two seed/pre-seed capital funds – "Start-up" and "Seed". In addition, in 2012, the Baltic Innovation Fund (BIF) was launched in close co-operation with the Government of Lithuania, Latvia and Estonia to boost equity investments made into Baltic Small and Medium sized enterprises (SMEs) with high growth potential. Innovation voucher system has been operating in Lithuania since 2012. Innovation voucher refers to a small fixed amount of money provided by the state that entitles SME's to buy R&D expertise from a higher education institution. Support is given to both, an SME and university and administered by the Agency for Science, Innovation and Technology (MITA). The process is as follows: having received an innovation voucher, a company prepares technical specification and contacts higher education institution. Having provided services to business, research institutions receive a fixed amount of money; one company may receive one voucher per year.

To foster accountability to tax-payers and disseminate research results to the general public, open access policy to research resources was developed. The national regulation suggests that all Lithuanian R&D resources located in valleys have to be available to the general society via open access. Therefore, over 20 open access centres were established by universities and research institutes. They have been developed covering the areas of social sciences, humanities, arts, information science and technology, biological and medical sciences, earth and environmental sciences, physics, astronomy, astrophysics and mathematics, chemistry and material sciences, engineering and energy.

An electronic portal *E-Research Gate* providing a practical forum aiming to provide opportunities for UBC, information search, knowledge co-creation and technology transfer was launched by the Agency for Science, Innovation and Technology (MITA). The portal serves as an information source on R&D services, financing possibilities, commercialisation and marketing of R&D products and services. The portal provides four major e-services: on funding, products, R&D services and announcements (E-Research Gate portal, 2015).

The legislation of the Republic of Lithuania provides the following tax incentives facilitating UBC: 1) Corporate profit tax incentives for R&D (expenses incurred by companies carrying out R&D projects can be deducted from taxable income three times; long-term assets used in the R&D activities can be depreciated within two years) and 2) Corporate profit tax incentives for investments in new technologies (companies investing into new technologies can reduce their taxable profit by up to 50%). To spread ideas on UBC, to make them a part of a discourse in the society and finally engage society in their implementation, media outreach activities have to follow governmental initiatives. Dissemination activities such as UBC promoting conferences and symposiums (e.g. Science and Business Partnership: Mission Possible in 2013, Innovation Drift in 2015), the column in the portals, university websites and TV programmes greatly contribute to UBC promotion and support in Lithuanian public discourse.

UBC situation has changed on the institutional level during the last years as well. Cooperation with external partners with the focus on business was included in Lithuanian university mission/vision statements, strategic documents and structural activities. Analysis of mission and vision statements, structural changes, projects, events, covering different areas of UBC was carried out. Official websites of Lithuanian universities were constantly explored aiming to observe whether there are any movement and organizational changes with regard to UBC. Mission and vision statements, statutes and other strategic documents were analysed in May 2014 and November 2015 (Annex 3). It was observed that although their formulation did not change much during this period, they include several evidently expressed indications of UBC. For instance, mission and vision statements in November 2015 were formulated as follows: "to *establish the forms of cooperation with Lithuanian and foreign enterprises, establishments, organisations, funds, and individuals*" *(*Vytautas Magnus University official websit, 2015), "*to initiate and actively implement the projects of value for the economic development of the country, which would encourage effective co-operation of scientific and educational institutions with high technology companies and create favourable conditions and environment for innovations and entrepreneurship*" (Vilnius University official website, 2015)*, or* "*to develop research-based innovations for society and business*" (Vilnius Gediminas Technical University official website, 2015).

Furthermore, structural changes have occurred in university governance with regard to UBC. Business councils, knowledge and technology transfer offices were established aiming to enhance cooperation with the business sector. For instance, in 2015 Mykolas Romeris University established Knowledge and Technology Transfer Office and 19 laboratories aiming to facilitate UBC, protection of intellectual property rights, providing consultations for researchers and business companies, commercialisation of R&D, etc. Vilnius University has created Intellectual Property Management and Commercialization Office the major functions of which include consulting university researchers on different areas of cooperation with business, invention disclosure and registration, protection and patenting of intellectual property, licensing, commercialisation of research results, start-up and spin-off creation (Vilnius University official website, 2015). Kaunas Technological University established Business Council which is an advisory body to the rector established with a purpose of strengthening university's relations with the corporate sector and providing advice and guidance. Currently, the Business Council includes 18 prominent Lithuanian business leaders (Kaunas Technological University official website, 2015).

In addition, Lithuanian universities engage in international projects on UBC. For example, Vilnius University together with partners from 7 Baltic and Nordic countries implemented a project "University and Business Cooperation through Success Stories" aimed to "enhance cooperation between higher education institutions and businesses through identifying the most important prerequisites that make university-business cooperation mutually meaningful and valuable" (Project University and Business Cooperation through Success Stories official website, 2015).

Furthermore, start-ups and spin-off are being created. For example, Kaunas University of Technology states that over 50 start-ups were developed at the University "Start-up Space", over 15 000 thousand students were involved in start-up activities, and over 150 ideas were presented during the last three years (Kaunas Technological University official website, 2015).

Furthermore, structures facilitating UBC have been established by universities. For example, Mykolas Romeris University opened Social Innovations laboratory network MRU LAB. 19 interdisciplinary laboratories and Research and Innovation Support Centre including Project Centre, Knowledge and Technology Transfer Office, Research Quality and Analysis Office, Research Communication Office and Doctoral School of Social Innovations was established in 2015 (Mykolas Romeris University official website, 2015). National Innovation and Entrepreneurship Centre by Kaunas Technological University was opened in 2014. The major areas of activities include: development and transfer of technologies acknowledged at the international level; establishment and development of companies creating the innovative product; intellectual property management and protection; fostering and dissemination of entrepreneurship and innovation culture; development of Open Access Centre (OAC) control system corresponding to the highest standards of management and service (Kaunas Technological University official website, 2015).

In addition, during the last years, numerous academic events and media appearances facilitating UBC were observed in Lithuania, as for instance, *Innovation Drift* organized in September 2015 by the Ministry of Economy and Agency for Science, Technology and Innovation. In addition, university websites introduced a separate column for business (next to traditional columns "students" and "research"). Different contests for students on business ideas were launched. The most often visited news portals had a separate column designated for UBC where the most prominent researchers and business people shared their experience and insights.

4.4. Interview method: results and discussion

The next step of empirical research was data, received from interview method, analysis and interpretation which involved "making sense out of what people have said, looking for patterns, putting together what is said in one place with what is said in another place, and integrating what different people have said" (Patton, 2002, p. 380). It included organization, analysis, linking, monitoring and reporting procedures and processes as fully and truthfully as possible. Applied qualitative research and summative evaluations typologies of inquiry

were chosen because the primary audience were scholars as well as business people and policy makers. Therefore, the primary objective of the empirical research analysis and interpretation was relevance, clarity, utility, applicability, effectiveness, continuation and expansion (Patton, 2002).

Inductive research data analysis involving discovery of patterns, themes and categories in research data was applied. Open coding approach, allowing findings to emerge out of the data and my interaction with it was applied. I have read several times through the transcripts, highlighted the ideas that caused the greatest scientific interest, classified and coded the answers. After some time, I would come back to the transcripts, read through them again, reflect, reclassify and recode. Typologies were developed making classification systems into categories that divided research data into parts along a continuum (Patton, 2002). In developing codes and categories (Annex 2) I used the convergence strategy, looked for recurring peculiarities and tried to figure out what and how things fit together. Then I applied divergence strategy and fleshed out the patterns and categories by applying "extension (building on items of information already known), bridging (making connections between different items) and surfacing (proposing new information that ought to fit and then verifying its existence)" (Patton 2002, p. 466). In addition, I examined the data that seemed not to fit the dominant identified patterns.

The next step was interpreting the data for meaning from phenomenological research data analysis perspective. After examining a set of interviews and my field notes, I asked such questions as what does this mean? What does it tell me about the phenomenon of UBC governance? What is the essence of lived experience of the UBC governance phenomenon? As interpretation involves going beyond the descriptive data I tried to attach significance to what was found, consider meaning, offer explanations and draw conclusions (Patton, 2002).

The following section provides the results of empirical research interview method. They were generalized and grouped into 7 major categories. Many direct quotations are provided because they are the basic source of qualitative inquiry data "revealing the respondent's depth emotion, the ways they have organized their world, their thoughts about what is happening, their experience, and their basic perceptions" (Patton 2002, p. 21). The graphical representation of empirical research results or prerequisites of successful UBC governance in Lithuania is depicted in Figure 29.

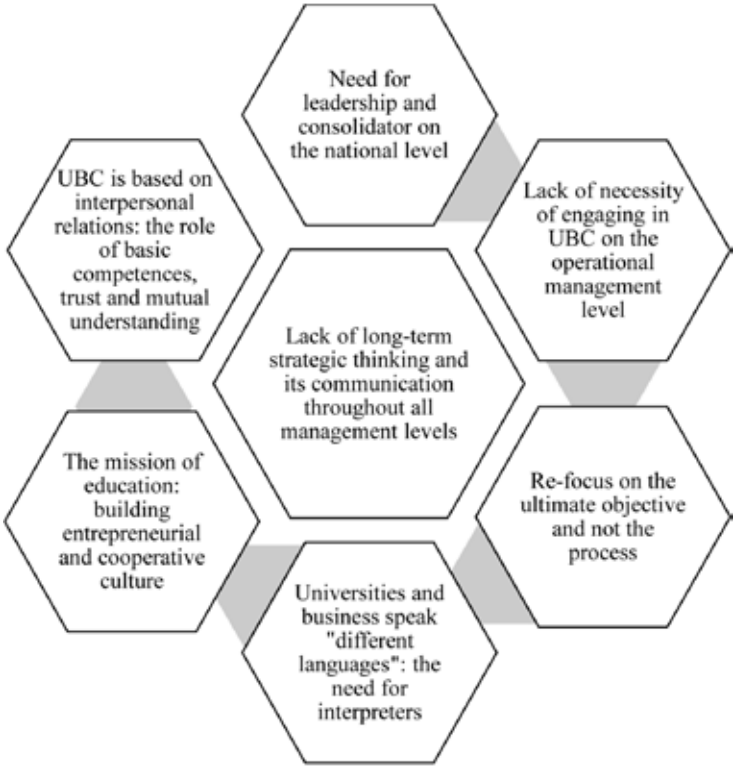


Figure 29. Empirical research results – prerequisites of successful UBC governance in Lithuania.
(*Source*: developed by the author)

4.4.1. Lack of long-term strategic thinking and its communication throughout all management levels

Several informants have emphasized that there is a lack of long-term strategic thinking on UBC governance on the national and institutional level. There is no institution on the policy making level that would develop and take complete responsibility for UBC governance system from a long-term perspective. A few informants have suggested that although UBC is included in the national strategies, on the operational level the measures of their implementation are not sufficient and functioning. UBC is not taken into consideration when allocating funding from the national budget. During the last period of structural funds, the budget was allocated to the development of infrastructures such as valleys or science and technology parks but little or no attention was given to make people from academia and business sector to network. In the words of one informant "*even the*

Law on Science and Education defining the goal of research as knowledge generation misses knowledge commercialisation. If it is not included in the strategic legislation, it is natural that it does not emerge in other activities".

Furthermore, due to the lack of long-term strategic thinking on the national level, universities seldom include UBC into institutional strategies, human resource management and budget allocation programmes, the empirical research findings suggest. It is crucially important to establish UBC on the strategic university level. He claimed that for example, in the words of one informant, "*business companies are approached only when the need to present external partners emerges as, for instance, when higher education institutions have to go through the process of self-evaluation or accreditation*". With regard to strategic planning, several informants have highlighted that while UBC is included into strategies on the normative level, they do not appear on the operational management level. For instance, UBC is not included into motivational systems of university human resources management systems. The focus is given to the qualitative and quantitative parameters of publications but not to the outcome generated by UBC. When allocating institutional funding, seldom priority is given to individuals, units or departments that cooperate with universities. In the words of one informant "*researchers target for and are evaluated for writing publications that will be cited but nobody evaluates and motivates that he /she will develop preconditions for a product that can be commercialised and later sold on the global market*".

From the business side, to the question whether UBC is included into company long-term strategies, the informants responded twofold. Some of the informants reported that engagement in UBC is not their strategic priority and, consequently, measures are not taken to implement it on the operational level. Other informants suggested that UBC is their strategic priority that is communicated throughout the organization, concrete measures are taken to facilitate the process and indicators to evaluate the efficiency of UBC are developed. For instance, informants from business sector have reported that on the strategic level budget is allocated to student internships in a business company, positions are established that include functions of cooperation with universities, companies cooperate with universities when developing new products for the market.

In addition, informants commented the UBC governance from Lithuanian Smart Specialisation perspective. They suggested that the Smart Specialisation Strategy is good as the strategy the creation of which involved different stakeholders, was well moderated and based on collegial decision-making but not well-communicated and is loosing the real meaning of UBC in its process of implementation on the operational level. For example, funding is planned to be allocated to UBC but only higher education institution can be the applicant or, in the words of one informant, "*it is loudly announced that funding will be allocated to collaborative projects but silently said that only a small amount of budget will be given to UBC*". It was also suggested by informants that on the operational level Smart Specialisation funding deviated from its primary strategy and finally funding will be allocated to maintenance of the existing infrastructure and not to the real implementation of the Strategy.

4.4.2. Need for leadership and consolidator on the national level

Several informants have suggested that there is no leader (institution) who could consolidate and integrate UBC. In the words of one informant, "*leadership problem is fear to take responsibility and make solutions both in the higher education and government institutions*". Another informant extended the thought by suggesting knowledge-based leadership. To cite him "*leadership is not enough, you have to know what you are doing as for, instance, a surgeon without knowledge but with the initiative is not the best solution*".

One informant defined the roles of leadership, management and individual UBC ecosystem participants. He suggested that "*Leaders have to define organizational strategies, managers have to implement them, and develop indicators that show what we have achieved. People will start cooperating when we tell them not only that they have to work together but also what they have to work on*". Another informant extended the thought that "*People do one of three things at work: what they like, what is useful and what is impossible to avoid. Today business people do what is useful, researchers do what they like doing and nobody tells us what we should not do*".

There is a divide between state agencies and lack of "owner" of UBC ecosystem in Lithuania. The Ministry of Economy is interested in protecting business and business infrastructure and the Ministry of Education and Science is interested in protecting universities and their infrastructures. When it comes down to allocating funding every ministry takes care only of the area that is under its liability. The agencies such as Science, Innovation and Technology Agency (MITA) and Research and Higher Education Monitoring Centre (MOSTA) could take the leading position in consolidating UBC in Lithuania but they are too dependent: one on the Ministry of Economy and the other on the Ministry of Education and Science. There is no institution that could bridge both ministries and initiatives developed by them. One informant has suggested that if there is no leadership on the policy-making level, the President has to use its current leadership to consolidate power that cannot be consolidated by all state administration apparatus. Furthermore, an informant suggested that the major problem of the state is "*that government understands itself only as a money provider…No institution works with the formation of project flows and the order of certain projects and innovation services*". Another expert believed that the state should encourage financially companies that take students for internships or employ students so that a company could, at least, cover a part of the student's salary.

4.4.3. Necessity of engaging in UBC on the operational governance level

The informants suggested that there is no real need for UBC on the operational level. Universities receive funding from the national or EU budget in the form of basic and competitive funding. Researchers who are satisfied with their university salary or the funding received in the form of project grants from research funding agencies do not need cooperation with business. It is not beneficial for researchers to cooperate with business – the amount of money is not as big as from project grants funded from the national budget but the expectations, terms and conditions of business are more severe. "*There should be the interest of one or the other party to cooperate: business people should be willing to expect certain tasks from researchers and researchers should be willing to implement them*".

In addition, empirical research findings suggest that for UBC to happen the position in the organization and knowledge level of contacting persons has to be similar. "*If a professor of physics will be approached by a university officer nothing will happen*", an informant concluded. Only if a practitioner and researcher can supplement each other's knowledge, it may lead to effective and efficient cooperation and innovation development. Another informant illustrated the case by an example when a company employed so-called "failed Ph.D.s" in a knowledge / technology transfer office. They have started doctoral studies and realized that it's not their life path but have enough competence to talk and understand a professor. The major objective of a system is to keep away business and professors but make them communicate through a professional knowledge and/or technology transfer officer who has an understanding of both – research and business environments.

Moreover, universities today are in the comfort zone and are not willing to change anything. Although the remuneration is not high researchers still live under presumption "*why should I move, it is better not to change anything, I will sit still, nobody is moving us around and we go forward that way*". Another informant evaluated the situation both from university and business perspective "*when looking from higher education institution point of view, why should we go after difficult business money if it possible to receive a project grant from the state. When looking from business perspective, why should we worry about cooperation with Lithuanian universities if it is easier to buy the final solution from, let's say, Harvard, or another global university*". As a solution to the problem, one informant mentioned the importance of introducing a real competition in the higher education sector. Today universities compete only for funding, for students and vouchers. "*When you ask a question "Why do you need more funding?" most likely you will receive an answer "We will make it clear when we will receive it*", one informant has claimed.

Another informant has suggested coming back to basic business logics and strategic thinking with regard to necessity of participating in UBC. "*When you have a strategy, you can transform it into directions you are going to follow, set up ultimate goals and objectives, assign them to the ones who will implement them and establish measurable indicators to measure progress".* Another informant provided a vivid example of business logics when participating in distribution of public funds and their priorities with regard to UBC "*if a business sees three competing measures under similar terms: to participate at the exhibition, to acquire equipment, and to cooperate with university, it will choose first to participate at the exhibition, second, to acquire equipment (at least, you can sell it later) and third, to cooperate with universities because it does not provide any particular benefit*".

The major challenge of the national UBC system is how to empower valleys. Infrastructure was built and equipment acquired and now the next step is how to "make them alive". Open access centres as a means to empower valleys were created. However, in the words of one informant, "*you can make interventional programmes such as valleys or incubators but they are temporary measures. They exist until they have financing but when financing stops then you have to create a real business*". Thus, the major future challenge will be diversification of income, ensuring financial sustainability and enhancing free circulation of people and ideas valleys.

Motivational systems, career development paths, research planning and evaluation system needs to include UBC elements. A few informants suggested reviewing the motivational system within universities. "*Participation in UBC does not add a researcher*

any bonuses. It is better to write articles. Therefore, the volume of co-publishing has increased but there are no real joint projects", one informant suggested. Although on the declarative level UBC is encouraged, in reality UBC sometimes is even discouraged. Informants shared that there have been cases when researchers invited business people to deliver lectures together by using their personal network but finally were punished for such activities. Such situations do not motivate researchers to engage in UBC, but on the contrary, people stop doing that. Empirical research findings suggest that universities should change motivational systems in a way that researchers would not focus only on publishing research articles in top journals but were motivated to cooperate with business. "*Motivational system needs to be corrected in the way that UBC was a headache of a researcher to a certain degree...If you take part in the project, he/she should involve a business partner so that the innovation has practical application and expansion*". Thus, the motivational system has to developed in a way responding to pragmatic needs of researchers, pushing them towards UBC and providing benefits from engaging in UBC.

Research findings indicate that the public governance institutions could also encourage UBC by introducing a norm that support is given only to collaborative, consortium-based projects. This way UBC would be formed even before receiving a support. Innovations and UBC could be also facilitated on the national level by modifying taxation system. For example, research findings suggest that the "ceiling" of social insurance system could be established to enable the employment of high qualifications employees with higher salaries, profit tax could be abolished to speed up investment environment and the creation of start-ups, spin-offs, etc.

4.4.4. Need to re-focus on the ultimate objective and not the process

In addition, a couple of informants suggested that Lithuanian UBC governance system does not have a long-term vision perspective. "*Most often there is a short-term interest from one side or the other because nobody develops long-term UBC system*", one informant has claimed. Therefore, it is very important to reach joint agreement on the national level that UBC is very important to socio-economic growth, to develop a shared long-term vision, communicate it widely in the society and develop measures to implement it.

Although it is suggested that UBC systems exist and are common for universities and business companies, financing is different and the reasons can be very pragmatic. As one informant shared a story: "*Researchers came to a business company and said that they had a certain technology. A businessman said "great". I am buying it from abroad and would be happy to buy it from you, next door neighbours, just I need certification. A researcher comes back to his/her university, shares a story with his/her colleagues and receives a response "certification costs lots of money and we will not pay for it" UBC ended".* This example indicates that each UBC case is unique and the system should not be focused for completely "win-win" situations. As UBC is based on unique needs and possibilities, the most important task for policy makers is to ensure general favorable environment for UBC to happen.

Moreover, informants have noticed that Lithuanians have a tendency to focus precisely on the procedures missing the ultimate objective or even not establish it. "*It is more important how things will be done than what we are doing. At the end of the day we have rules but cannot attract an investor who could fit them*", one informant suggested. Another

informant expressed an opinion that although leadership is important, it serves only as the facilitator of processes. "*If processes are good, leadership will help them. If processes are bad, leadership might even worsen them*". The other expert claimed that "*The ultimate objective of a researcher should be that his work needs to be commercialized and a Ph. D. student, when defending his/her thesis has to show that the outcome of his/her research can be commercialized. If we don't have such an objective, cooperation does not happen*". It is a characteristic of Lituanian mentality that people are so precisce and accurate in implementing the procedural issues that loose the ultimate objective.

4.4.5. Universities and business speak "different languages": the need for interpreters

Informants were also asked whether university researchers and business company employees understand each other's ultimate objectives or "speak the same language". Although each individual is different and it is impossible to make generalisations, the tendency observed from personal semi-structured in-depth expert interviews is that business and academia are two separate worlds the distance between which is sometimes bigger, sometimes smaller. The majority of informants responded that the 'languages' are completely different, business and academia do not have the mutual understanding. "*If we look at the meta-goal – success of Lithuania and well-being of its people – yes, we share that goal. But if we go to operational goals, they are completely different. The business objective is to learn how to make good products, then to export them and bring back as much money as it is possible. The focus of Lithuanian research is to spend as much money as possible (on infrastructure, laboratories, etc.)*".

It is partly caused by the mission of public universities and business sector: while the mission of public universities is to generate and disseminate knowledge, the mission of business companies is to increase profit. Research informants confirmed that so far the major outcome of university researcher's work is the quality and quantity of publications, the level of their citation and dissemination. "*Research commercialisation is not considered to be the outcome to universities and is not included in researcher's motivational schemes*", an informant suggested. The outcome of business employee's activities is the increased level of profit. To keep the competitive advantage, business companies have to keep their confidential information that cannot be disclosed to the general public.

In addition, one respondent suggested that the following types of conflict emerge when we start to speak of UBC: conflict of definitions, conflict of mutual understanding, conflict of interests, conflict of roles business and universities play, etc. In addition, the reality is perceived differently. *"When you look from the research perspective, "what is it" is different from "what is it", when you look from business perspective*". The other informant extended the thought and suggested that if a business needs university research it is not clear and evident where to look up for information on university services. "*If I came to university and said that I had a problem and don't know how to solve it, most likely I will receive an answer "listen, find out how to solve your problem and what kind of research do you need, come back and we will help you with the research. Most likely the businessman will not come back"*. Therefore, it is very important to facilitate communication and mutual understanding between people of university and business sectors.

An informant who developed business from a research institute shared that in their sector people speak the same language because their business evolved from academia, the majority of company employees came from the university, have Ph.D.s and for almost thirty years have been constantly communicating with students in the field. As a result, they speak the 'same language' and understand each other. He also shared examples from other fields when "*a business company developed from the research institute, are located nearby, have, for example, lunches together, and migrate from a university lab to production department and vice versa, there is shared communication and understanding*". Other informants believe that the difference is slight, it decreases with time and the general mutual understanding is increasing. Valley projects can illustrate the point of view. The mutual understanding between researchers and business sector employees is not satisfactory. However, one informant suggested that "*the absence of cooperative culture and mutual trust is the major problem of national mentality*". Only the sectors that foster cooperation are flourishing on the international market. They join their forces – business people, researchers, students – on the national arena and compete successfully globally. Examples can be laser production, chemistry, biotechnology sectors.

In addition, there are communication gaps on the operational level. One informant has suggested that there is miscommunication on the institutional and individual level. He thinks that universities have not learned to tell what they are able to produce and provide examples in such a way that a business could understand what they can gain from universities. Universities seem to suggest that "*may business come to universities and learn*". Another respondent said that "*we have not learned to communicate in a way as to hear each other*". Therefore, it is very important to develop marketing and persuasive communication competences at universities including researchers and research support officers (TTO or KTOs). Furthermore, a couple of experts thought that Lithuanian researchers are not good sales people. "*Researchers simply can't go and sell what they have created, it is not in their nature*". Universities have to show initiative, go into cooperation first and become oriented towards sales and business. However, researchers need to learn to present themselves better, to sell their ideas and research-based products and/or services. It is an objective for a long-term perspective because it requires the transformation of researchers attitude towards business, shift in identity understanding and collective mentality.

Consequently, the role of mediators between researchers and business sector employees who have the profound knowledge of the work of the researcher and understanding of business logics, has communication and marketing skills, is extremely important. The importance of knowledge and/or technology transfer offices was highlighted by several informants. "*We need to empower university to have open doors, to have a form to sign contracts, etc.*" Lithuanian UBC ecosystem needs mediators that would have the know-how and could bridge universities and business. The number of qualitative mediators between universities and business companies is very low in Lithuania, the informants think. Therefore, there is a great need to introduce the profession of knowledge and/or technology transfer officer into university programmes.

On the other hand, "*the salary of a professional knowledge and/or technology transfer officer is so high... that universities are unable to pay them such salaries*", one informant claimed. Therefore, there is a need of mediators between business and university, the salaries of which could be covered by the public funding. It requires political will and

public investment in UBC governance competences. It is a solution that would bring results from a short-term perspective.

4.4.6. UBC is based on interpersonal interaction: the role of basic competences, trust and mutual understanding

The essence of cooperation is interpersonal communication and interaction. It is not based on institutions, though they they are very important, but on individual people from the university or business company. "*When we speak about UBC, we mean cooperation between people from university sector with people from business sector*", one informant suggested. UBC in Lithuania is functioning "*on individual level. On the institutional level, UBC practically does not exist except a few small sectors that have a long tradition of cooperation*", a leader of one association uniting business companies and universities has claimed. Thus, facilitation of individual researchers and business sector employees to participate in UBC networks and engage in UBC activities should be the focus of university, business and public governance.

It is prudent to speak about the importance of trust and mutual understanding. To illustrate the case, I would like to cite one informant who suggested that "*Business does not need anything of what research can do. That has been the dominating paradigm and I don't know how to break it. Today business needs something and research can do something just we don't know what does business need and what research can do".* To build trust and mutual understanding it is very important to establish management infrastructures encouraging communication and networking between individual people prior to expecting participation in UBC activities.

In addition, a couple of respondents suggested that there are different understanding and strategies between business and governmental sector. "*Business looks at the state investor and asks: what is your business vision? What are you investing in? If you don't have a vision as a state investor, I can suggest one as a private investor. Then please be so kind to adapt to my vision or let's develop it together*". Different understanding emerges out of different ultimate goals, ownership understanding and financial risk and gain element. Business people make decisions taking risk on their own finances while public governance has to protect public interest, is more cautious with regard to public finances and, consequently, decisions are made more slowly. In addition, empirical research results reveal that although UBC is encouraged on the declarative level, in reality, today universities are interested that fewers business companies get involved in university decision-making. "*When we force universities to cooperate with business we believe that we provide them with opportunities. Indeed, we create many problems to them which they have to solve. The fewer business interferes with universities, the less problems the latter have. Then they can use the argument: business does not come to us...*" It can be explained by the conflict between public and private interests, the difference between public and private sector governance, and allocation of private and public finances.

Several informants concluded that UBC is a complex phenomenon. Both parties, researchers and business sector employees, are not willing to go into the contact and "going the easiest way". To illustrate the point, I would like to cite one thought expresses by a successful businessman who developed his business from science. "*Researchers do*

not want to engage with such a straightforward and censorious customer as a businessman. Nobody wants to have a nagging customer if he/she can have a more flexible customer – research funding providing agency. You receive more funding and do whatever you want". In addition, in the words of another informant "*A researcher wants to live comfortably, not to have somebody who bosses him/her around, to engage in research he/she likes, to work when it is convenient, etc. Business is carried out the other way around: they need results, the solution of concrete problems for a certain amount of money today and not tomorrow*".

Moreover, empirical research findings suggest that when a business needs a product or service, geographical proximity and support to local research does not become a top priority. Several informants said that most often they do not look for a necessary product or service on the national market because it is easier, faster and cheaper to acquire it from the international market. In the words of one respondent, "*university is selling its services and business have a choice both in Lithuania and abroad. Lithuanian universities should market themselves better and show their competences, to explain to business on what principles we can cooperate*". It comes down to interpersonal communication and cooperation. If university researchers and business sector employees were provided with opportunities for informal communication and networking.

4.4.7. The mission of education: building the entrepreneurial and cooperative culture

Empirical research also reveals that education plays a vital role in developing the entrepreneurial and cooperative culture for UBC future. "*We need to know what's around us and what's within us"*, an informant suggested. Lifelong structures have to be developed to enhance entrepreneurial mindset. Secondary school students need to learn how to think creatively, how to integrate different interdisciplinary perspectives, how to work in teams, learn the essentials of business and research careers. In the opinion of one informant, it is necessary to provide conditions for early high school students to engage in technological sciences and engineering. Students from the early age need to engage in extra-curriculum activities to learn to take responsibility, to understand the principles of innovation development and how to meet the market demand needs. One expert suggested to make a map of Lithuanian ecosystem and evaluate who can do what and how to offer to each other.

Moreover, the entrepreneurial culture needs to be fostered in all areas of society including universities. The attitude that universities are not business and should not operate as profit-seeking organisations is still evident from the empirical research. Even business people do not recognise that universities should also step in the entrepreneurial realm. In the words of one informant from a business sector, "*there is no need for universities to become commercial or profit-seeking institution. That's not the case, that would be bad*". It indicates that universities, business and general society still does not recognize that public universities can act as commercial institutions.

In addition, lifelong structures need to be implemented to facilitate cooperative culture in academia and society. Hierarchical top-down approach that dominated under classical Weberian management does not foster cooperative culture, therefore, it should be culturally minimised. For example, the hierarchy between a researcher and a student

does not encourage progress and creativity and may be harmful to relations with business partners. In the words of one informant: "*universities should not be closed in their ivory tower and look down to business that we are doing good research and preparing specialists and you, business people, only produce*". It requires a shift in mentality in academia and business community viewing both sectors as equal but with different missions. Thus, the mission of universities and all education systems is also to develop cooperative culture in Lithuanian society.

The most common forms of UBC in Lithuania include student internships, participation in university governing bodies, start-up and spin-off development. One informant shared an example of a project integrating students, researchers and business companies. The major objective of the project Future Business Team ATVERK was to involve students in the solution of business problems by developing team entrepreneurship in real business environment. During the project students in cooperation with business companies developed a product, service or a solution that would be developed into a prototype and reach the stage of production. Another informant suggested that "*student internships are the most common form and most often it is based on personal contacts with university professors aiming to test students for later employment at the company*". It indicates that student involvement, talent hunting and finding a match between study programmes and market demand is one of the most common UBC forms.

In addition, informants were asked a question whether a person with a Ph.D. would have a competitive advantage when employing a person in business. Empirical research findings reveal that "*Ph.D. is a positive thing if a business company knows how to use his/her education and not say that your qualification is too high for us*". However, an opinion that business companies tend to avoid employing people with Ph.D.s was also expressed. It was substantiated that business needs practitioners, not theoreticians indicating that there is still vivid opinion in business that experience and practical qualifications are more important than theoretical knowledge.

Another expert from business sector shared that he represented a service centre that constantly employs young specialists. He shared his experience that in cooperation with a university new study programmes were developed and after completing the study programme the students were employed at the company. In addition, business company employees constantly deliver lectures at the university, take part in career days, students come to visit the company.

One expert from a business sector shared a story how they cooperated successfully with university in developing product that is sold on the market and attracting students for internships: "*We are happy to invite students for internships every year. These measures helped us to find skilful employees and to strengthen the company's image*". Drawing on his experience with student internships he also suggested that "*it is good when students leave universities having already tried business, having experience and understanding what kind of world they will enter*". Thus, student internships are still an important part of UBC processes.

Despite some gaps and step backs, there is a promising future for UBC culture in Lithuania. Empirical research informants provided some interesting and useful insights into the future of UBC in Lithuania. As one informant has suggested *"if you have asked a question whether UBC is necessary ten years ago, you would probably receive an answer*

"what are you talking about"? But ten years have made a significant change and I believe that within ten years we will cooperate and develop joint products and services". It indicates that UBC situation is progressing for better in Lithuania and the progress is rather rapid.

One informant suggested following European model of IPR protection where IPR belongs to a researcher and not to university. He believes that it is difficult for a researcher to develop products within the structure of university governance and much easier to create a spin-off company. If a researcher develops his/her idea based on the public funding into a commercial product or creates a spin-off company that employs people, the state investment of public money into his/her research will return in the form of taxes.

Moreover, when asked the question about the vision of the UBC governance in Lithuania one informant suggested that most likely within ten years there will be more seed money and venture capital opportunities to start-up a business for university students and researchers. The availability of venture capital funds will accelerate the development of start-ups and spin-offs universities will become more entrepreneurial in all their activities. *"It is related to the spirit of innovation, that is if you have an idea which can be developed into big business...We have a hope that the boom of starters will involve researchers"*, one informant claimed. Research results also reveal that there is a tendency that researchers will develop start-ups and spin-offs in the future.

Another expert, evaluating his company's current cooperation with universities experience and that their strategy is cooperation with universities believes that "*in the future our company will be associated with universities. Students and all academic community will know about us very well. Our customers will know that by cooperating with universities, we have achieved great products*". It indicates that business landscape and attitude towards universities is changing. The new generation of business managers will have a different approach to universities and bring motion to the UBC governance.

Discussion of the empirical research results

Empirical research results indicate that a commonly agreed on vision on UBC, long-term strategic thinking and its communication throughout all management levels are missing. Although UBC is evident in documented national strategies, policy documents, university mission and vision statements and the chain linking national strategies with organizational strategies is established, UBC is still not a national and institutional priority in Lithuania on the operational level. However, there is a gap between declarative and reality. Consequently, on the operational level university and business people are not encouraged and empowered to engage in UBC.

In addition, there is a need for leadership and UBC consolidator on the national level. As UBC is regulated by two ministries – the Ministry of Education and Science and the Ministry of Economy – it is difficult to achieve the synergy between business and higher education sectors. Although following Systems theory both sectors are elements of the same ecosystem and following Stakeholder theory universities can be considered as stakeholders of the business, there is a gap between them caused by national UBC policy fragmentation.

Re-focus on the ultimate objective and not the process. Although it is suggested that UBC systems exist and are common for universities and business companies, financing is different and the reasons can be very pragmatic. There is a tendency in Lithuanian society

to focus on how things will be done rather than on what is being done. Consequently, it causes bureaucratic burden and inefficient resource allocation.

Empirical research findings also reveal that people from business and academia have a tendency to speak "different languages". They don't understand the ultimate objectives of universities and business and don't share a common objective. The communication and cooperation gap can be explained by Institutional theory. There was not private property and business companies during Soviet times, the business had a negative connotation and entrepreneurial people were considered as "touts". University people still bear this connotation, do not understand business logics and research results indicate that ten years ago the phenomenon of UBC was not even considered as possible. Therefore, there is a need for interpreters or people who have the understanding of both sectors and can help them to communicate and cooperate.

Furthermore, as UBC means cooperation between individual people from university and business sectors, basic competencies, trust and mutual understanding, ability to connect academic and business sectors, commitment and shared vision and result oriented activities are essential elements of UBC ecosystems. University, business and public governance have to develop structures and systems that educate people about the benefits of participation in UBC and encourage them to engage in UBC.

Empirical research also reveals that education plays a vital role in developing entrepreneurial and cooperative culture in Lithuania. Lifelong structures have to be developed as people at all educational stages need to learn how to think creatively, how to integrate different interdisciplinary perspectives, how to work in teams, to learn the essentials of business and research careers. Knowledge management component including development of cooperative and entrepreneurial culture, knowledge on the major principles of university and business mission and functions, knowledge received from UBC governance perspectives including knowledge identification, distribution, application, protection and measurement.

To conclude, empirical research results indicate the shifting mentality regarding public policy and public policy service delivery that were influenced by the evolution of the New Public Management to New Public Governance, from Conventional or Mode 1 to Corporate or Mode 2 approach to university governance, the impact of the evolving knowledge creation models The Triple Helix, the Quadruple Helix and the Quintuple Helix knowledge management models. Today universities, business and public governance are experiencing the typologies between minimal vs strong state, flexibility vs stability, regulation vs deregulation, fragmentation vs unity. There is conceptual misunderstanding on the UBC phenomenon from university, business and public governance perspectives.

4.5. Developing the conceptual normative model of university and business ecosystem governance

Based on theoretical meta-analysis and empirical research results, simple modelling and logical construction method was applied in designing the conceptual normative model of UBC governance for Lithuania. The process entailed several stages: i) priority setting based on the purpose and objectives of the research as well as theoretical and empirical research results identifying the main areas where the potential for UBC governance lies or

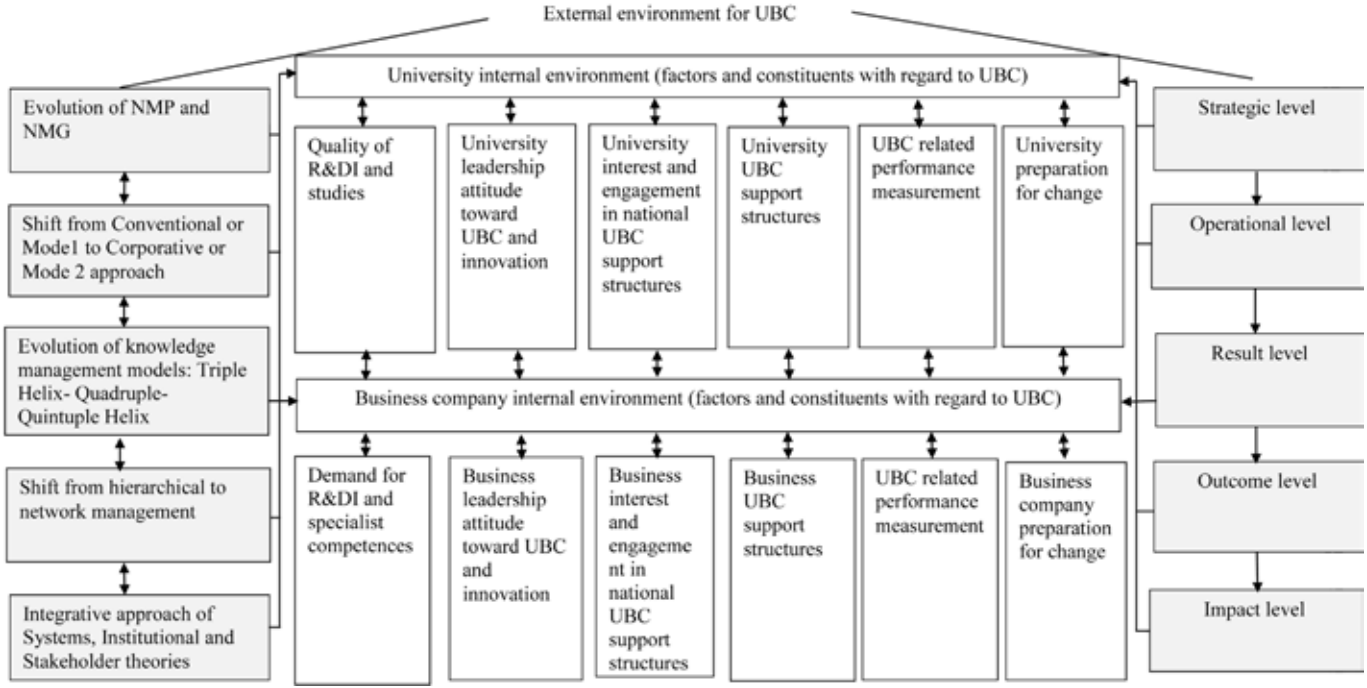


Figure 30. Conceptual normative model for UBC governance in Lithuania
(*Source*: developed by the author)

the ones in need of improvement and/or main areas; ii) drafting the conceptual normative model for UBC governance in Lithuania.

The model was built with regard to the purpose of the dissertation - to explore the concept of UBC governance and based on international experience and best practices to develop a conceptual normative model that can enhance UBC governance practice in Lithuania. It also reflects the tasks of the dissertation including the analysis of theoretical framework of UBC governance, exploration of the experience and best practices of UBC governance in different European and North American countries and examination of the case of UBC governance in Lithuania.

In addition, the model was constructed on the presumption that closer relations between universities and business is the prerequisite for business and national competitive position on the global market. UBC is also crucial for overcoming modern societal challenges, implementing three-fold university mission, bringing added value to local industry, creating employment and disposable income for general society. Therefore, well-established external and internal national and institutional environment for UBC and innovation needs to be established based on knowledge and network management perspectives. Consequently, the synergy between university, business and public governance built on formal and informal relation should drive UBS, innovation and entrepreneurship culture in Lithuania. The graphical representation of the conceptual UBC governance model is depicted in Figure 30.

The conceptual normative model for UBC governance includes the internal and external environment of two major UBC ecosystem participants – universities and business companies. The external UBC environment includes international and national factors. International factors cover global changes in university, business and public governance sectors during the last decade, internationalisation of studies and R&DI, scientific and cultural migration, multiculturalism, and favorable international geopolitical situation. In addition, international forces include the initiatives and best practices of foreign countries in UBC governance on the European and national level. It involves both formal and informal cases, public policy developments, the experience of different universities, business companies, UBC ecosystem structures, etc. Thus, as Lithuanian UBC ecosystem is a part of the global and European environment, the forces, movements, initiatives happening in other countries have a direct impact on Lithuanian UBC ecosystem management.

Furthermore, UBC ecosystem is influenced by national environment. The national environment includes socio-economic and socio-cultural aspects including the tradition of UBC, the national mentality behind it, legislation, national business, research, innovation context, etc. In addition, national context also includes association, communities, non-governmental organisations operating in the country. For instance, such associations as Lithuanian Confederation of Industrialists, Lithuanian Business Confederation, Engineering Industries Association of Lithuania LINPRA, Knowledge Economy Forum can serve as examples. Furthermore, political system of the country plays also an important role in determining UBC national environment. The inclusion and formulation of UBC in the national political agendas are of crucial importance in determining UBC public policy and support structures.

University internal environment (factors and constituents with regard to UBC) include six major categories: quality of R&DI and studies, university leadership attitude towards UBC and innovation (competencies and attitude towards the possibilities of knowledge and innovation management), university interest and engagement in national and international UBC support structures (valleys, clusters, science and technology parks, associations (e.g. Lithuanian Confederation of Industrialists, Lithuanian Business Confederation, Engineering Industries Association of Lithuania LINPRA, Knowledge Economy Forum, etc.). In addition, university internal environment including university internal UBC support structures (institutional legislation, strategies, operation documents, functions and competences of KTO or TTO staff, participation in joint projects and contracted research, availability of incubators, joint laboratories, legal and financial advice, consultations, motivational schemes, etc.), UBC-related performance measurement systems (strategic and operational management of internal processes, internal and external audits, etc.), and university preparation for change (traditions, organizational culture, qualifications of academic and administrative staff, attitude towards business, etc.).

The main factors and constituents of business company internal environment include identifying or developing demand for R&DI and competences that a university can provide, business leadership attitude towards UBC and innovation, business interest and engagement in the national UBC support structures (valleys, clusters, science and technology parks, associations (e.g. Lithuanian Confederation of Industrialists, Lithuanian Business Confederation, Engineering Industries Association of Lithuania LINPRA, Knowledge Economy Forum, etc.). Other business company internal environment factors and constituents with regard to UBC include business company internal UBC support structures (participation in joint collaborative projects and contracted research, availability of incubators, joint laboratories, documented strategies and operation documents, motivational schemes, etc.), UBC-related performance measurement systems (strategic and operational management of internal processes, internal and external audits, etc.), and business company preparation for change (traditions, organizational culture, staff qualifications, attitude towards universities, etc.).

The architecture of the conceptual normative model for UBC governance include the evolution of NMP and NMG, the shift from Conventional or Mode 1 to Corporative or Mode 2 approach to modern university governance, the evolution of knowledge management models from the Triple Helix through the Quadruple Helix to the Quintuple Helix models, the integrative approach to Systems theory, Institutional theory and Stakeholder theory as well as the shift from the hierarchical to network management. These elements affect each other and the internal environment of universities and business companies.

The conceptual normative model of UBC governance includes such characteristics of NPM and NPG evolutionary process as introduction of market-oriented culture dominated by major principles of economy, efficiency and effectiveness, explicit standards and measures of performance, greater emphasis on output control, private sector management manner, parsimony in allocating resources, accountability, public interest and value, interdependence, social responsibility, and citizen participation in public service delivery.

In addition, the conceptual normative UBC governance model includes the shift from Conventional or Mode 1 to Corporative or Mode 2 approach to modern university governance. Conventional or Mode 1 approach referring to the traditional way of

university governance with university mission of providing education and research was focused on elite education, fundamental research carried out within traditional disciplinary boundaries, university as autonomous institution governance by hierarchical model. Under Corporative or Mode 2 approach university mission has become to lead innovation by generating and disseminating knowledge – providing education, research and outreach to society. Universities focus on developing student skills and competences to be employed at the market, on applied rather than fundamental, interdisciplinary rather than disciplinary research. Other characteristics of Corporative or Mode 2 approach to university governance include efficient resource allocation, marketing and branding. Such characteristics of public universities as catalytic, community-owned, competitive, mission-driven, result-oriented, customer-driven, enterprising, decentralized, cooperative universities are included in this constituency. Furthermore, the concept of Public Private Partnership referring to an endeavour between a public and private sectors whereas a private sector venture provides a public service including the major models of contracting, franchise, concession, joint venturing, and strategic partnership is included in the conceptual normative UBC governance model.

In addition, the development of knowledge creation models from the Triple Helix through the Quadruple Helix to the Quintuple Helix model was included in the conceptual normative UBC governance model. The Triple Helix model refers to a three-dimensional perspective of innovation and socio-economic development between university, business and government. The Quadruple Helix modelincludes the three elements of the Triple Helix Model government, university and business that operate in the realm of the general public which is also based on culture, media, and art. The Quintuple Helix model adds the helix of the natural environments of society.

The normative UBC governance model was also constructed with regard to the integrative approach to Systems, Institutional and Stakeholder theories. Systems theory helps to view UBC ecosystem as a framework for wholeness, integration, relationship, pattern, feedback and organization. As universities and business companies are interconnected, they influence each other's behaviour and relationships. Systems theory places UBC in the broader political, socio-economic, legal, cultural and sustainable development environment. Finally, the open versus closed, dynamic versus static, multidirectional versus linear systems approach explains the UBC ecosystem and its processes. Institutional theory examining the processes by which structures become authoritative guidelines for social behaviour and three major subthemes: isomorphism, institutional logics and institutional. These characteristics were regarded in constructing the normative UBC governance model. Stakeholder theory dealing with involvement of stakeholders helps to answer the question who are university and business stakeholders and how should they be managed to achieve success of a company or a university. The Stakeholder theory helps to solve the problem of value creation, the ethics and the managerial mindset. It implies that to create value it is important to be aware of how value is created for every stakeholder and that stakeholders of the university and business company are interconnected.

Furthermore, the design of the conceptual normative model of UBC governance also includes such levels as strategic level, operational level, result level, outcome level and impact level. Strategic level refers to the strategic national and organizational documents, involvement of all UBC ecosystem stakeholders, developing UBC support structures,

frameworks and mechanisms, and resource allocation to UBC by public governance institutions. The operational level refers to UBC performance including motivational systems, employment, promotion and remuneration, management of resources, development of structures for interdisciplinary and inter-sectorial mobility. Result level refers to results gained from UBC including new or improved R&D based products or services that are commercialised, the qualitative and quantitative parameters of joint inter-sectorial publications, etc. The outcome level includes contribution to university study programmes, R&DI processes, business profit mark-up level caused by UBC, etc. The impact level covers general contribution to socio-economic processes, regional development, educational system, employment rate, and increased quality of life.

CONCLUSIONS AND RECOMMENDATIONS

The conclusions of the dissertation are based on the answers to the research question "what theoretical management approaches, doctrines and models can be applied to enhance UBC practice in Lithuania?" The dissertation contributes to scholarly enquiry and knowledge co-creation by exploring the concept of UBC governance, analysing UBC practice in different foreign countries, providing the case study of Lithuania and developing a conceptual normative model to enhance UBC governance applicable to Lithuanian context. Based on the theoretical meta-analysis and empirical research the following conclusions were made:

Analysis of the theoretical framework for UBC governance

1. Theoretical framework for UBC governance can be examined with regard to the evolution of NPM and NMG. Aimed at modernization and efficiency of university services as public services NPM and NPG enhanced the emergence and expansion of Corporative or Mode 2 approach to university governance. The doctrines introduced market-oriented management culture into higher education aimed to better allocate public budget resources and dominated by 3 major principles: economy, efficiency and effectiveness. Characteristics of NPM suggested by D. Osborne and T. Gaebler and NPG suggested by S.P. Osborne including catalytic government, community-owned government, competitive government, mission-driven government, results-oriented government, customer-driven, enterprising government, decentralized government can be transferred to public university governance.
2. UBC governance has to be analysed with regard to the shift from Conventional or Mode 1 to Corporative or Mode 2 approach to university governance. Corporative of Mode 2 approach explains the emergence of business governance culture in universities including the shift from elite to mass education, from fundamental to applied research, from basic to competitive university funding schemes. The shift also introduced business governance practice in public universities including strategic management, mission and vision statements, efficient resource allocation, introduction of marketing terms previously unfamiliar to academic environment.
3. UBC governance can be analysed from the development perspective of the Triple Helix, the Quadruple Helix and the Quintuple Helix knowledge management models as they reflect to development of societal values and mentality. The Triple Helix model indicates a three-dimensional perspective of innovation and socio-economic development between university, business and government, the Quadruple Helix model adds the element of the general public which is based on culture, media, and art, and the Quintuple Helix model contributes to UBC governance concept by adding the 'natural environments of society'.
4. Integrative approach to Systems theory, Institutional theory and Stakeholder theory can be taken into consideration when exploring the phenomenon of UBC governance. Systems theory introduces connectedness, interaction, feedback, relationship perspective and helps to answer the question how and why does UBC system function as a whole. Institutional theory can be applied in the analysis of UBC governance phenomenon from isomorphic, institutional logics, and institutional work

perspectives. It explains the current status of UBC as a consequence of conflicting institutional logics between the mentality inherited from the Soviet times and public governance attempts to change it on the grounds of UBC forces from the European Union and North America. Stakeholder theory was applied to explain the principle values of business and university governance.

5. UBC governance can be analysed from network, knowledge and innovation management perspectives. Network management perspective helps to answer the questions how can universities and businesses best organize themselves in order to benefit from each other's resources, do UBC networks present mechanisms for priority setting, decision-making and fundraising purposes, what mechanisms and patterns encourage UBC. Network management perspective was examined from individual researchers, organizational and public governance perspectives. Knowledge and innovation management perspective examined knowledge generation, accumulation, transfer, application, and measurement processes that are caused by UBC.

Exploration of the experience and best practices of UBC governance in different countries

Based on the analysis of scientific literature, current international reports and innovation ratings the international context of UBC governance was examined by providing examples of UBC governance experience and best practice in Europe and North America.

1. The UBC experience and best practice in the Anglo-Saxon countries including the current situation, UBC support structures in the United Kingdom, Ireland, United States of America and Canada was examined. The conclusion was made that the Anglo-Saxon countries take the leading position in UBC due to the well-developed and communicated UBC support structures and liable organisations.
2. The German-speaking countries continue the strong tradition of UBC governance. They have a well-developed UBC governance system and are considered innovation leaders in Europe. Universities are increasingly engaged in collaborative research with private companies due to a number of support measures that make UBC mandatory in order to receive research grants. Recently emphasis has been placed on knowledge and technology transfer especially from universities of applied sciences to business, innovation policy has a broad approach including linkages towards educational policies and other social and economic framework conditions, have a well-coordinated and consistent public policy, and advance not from imitation but from a radical innovation strategy.
3. The Francophonic and Benelux countries are developing the tradition of UBC and are considered as innovation followers. Innovation via UBC is driven by several agencies that form sustainable public-private partnerships involving public research and knowledge and/or technology transfer. In Francophonic and Benelux countries UBC and innovation are delegated to regions. Although traditionally the emphasis of most funding initiatives has been focused on technological innovation related to the commercialisation R&D results, recently the shift has been also made to non-technological innovations. The major strategic agendas outline a long-term perspective and promote UBC with regard to the challenges facing society.

4. The Scandinavian countries foster the pragmatic tradition of UBC and are considered innovation leaders in Europe due to empowering universities with the right to invention ownership. The extensive geographical network of universities has regional units, various innovation platforms and incubators. UBC governance is based on the mentality that UBC is crucial for implementing university mission, increasing graduate skills, bringing added value to local industry, creating employment and disposable income. The pragmatic approach to UBC is substantiated by the well-established environment, entrepreneurship in education and establishing researchers' employment and working conditions as national priority.
5. The Southern European countries are considered as having moderately developed UBC tradition because UBC governance is dominated by the public sector and marked by high degree of centralisation though during the last years the countries have developed policies facilitating UBC. The national R&D and innovation priorities are set by the national and regional strategies.
6. The Central and Eastern European countries are building the tradition of UBC and are considered as moderate innovators with the innovation performance below the EU average. It is caused by the lack commitment and cultural orientation towards UBC, R&D systems are still dominated and encouraged by public funding and central governance, motivation and value system between different members of UBC ecosystem are different, business has limited capacity to absorb research findings, and bureaucracy at universities hinder UBC development. However, aiming to re-orientate the economy to UBC and knowledge-intensive business activities there are a number of well-established measures, EU structural funding is allocated to UBC which indicates UBC progress in Central and Eastern Europe.

Case study of UBC governance in Lithuania

1. Lithuania together with other countries of Central and Eastern Europe is considered as the moderate innovator and has a specific context of UBC development. The Restoration of Independence has gradually transformed UBC governance landscape, however, the reforms were slow in higher education area and UBC was not at the core of academic and public discourse. The breakthrough was achieved after the Government made a decision to allocate up to 10% of the total EU structural funding for 2007–2013 to research. Consequently, UBC enhancing schemes such as valleys and clusters with investment from the national budget and structural funds for the period of 2007–2013 were introduced. In 2010 the Government put an emphasis on UBC by approving Lithuanian Innovation Strategy for 2010–2020, establishing the Science, Technology and Innovation Agency and allocating funds for UBC collaborative projects.
2. The Systems theory can help to identify the connections, interface and patterns of Lithuanian UBC ecosystem. The organizational structure includes individual researchers and business people, universities and business companies, associations, forums, non-governmental organisations and public governance institutions the activities of which are related to UBC and innovation development. It was concluded that Lithuania has a well-developed UBC legislation and moderately developed system of UBC support measures. In addition, there is the gap between UBC on strategic and operational management on the national and institutional level. Lithuania has several

good examples and best practices of UBC governance in the fields of biotechnologies, laser and chemistry industries.

3. The Institutional theory was applied to identify the dominant characteristics of Lithuanian UBC ecosystem and explain it from contradicting institutional logics perspective. The conclusion was made that Lithuanian UBC ecosystem lacks commitment and cultural orientation to UBC which is mostly caused by the shift from the Soviet planned economy to Western European market mentality, from Conventional or Mode 1 approach to Corporative or Mode 2 approach to university governance.
4. Stakeholder theory was applied to identify structural, relational and educational factors of UBC ecosystems. Structural factors include long-term strategies, mission and vision statements, national and organizational UBC support structures. Relational factors include trust and mutual understanding, ability to connect academic and business sectors, commitment and shared vision and the result-oriented activities. Educational factors include the development of cooperative and entrepreneurial culture, knowledge on the major principles of university and business missions and functions, and knowledge and innovation management perspectives including knowledge identification, distribution, application, protection and measurement.
5. Empirical research has revealed the following structural shortcoming of Lithuanian UBC ecosystem. Long-term strategic thinking and its communication throughout all management levels are missing. There is a need for leadership and consolidator on the national level. Motivational structures and systems need to be developed to engage university and business sector employees to take part in UBC on the operational level. The national and institutional UBC governance system needs to be re-focused on the ultimate objectives and not on the process. Empirical research results have also revealed that university and business sector employees do not have a profound understanding of the ultimate objectives of the university and business, and, consequently, speak "different languages". Therefore, there is a need for "interpreters" or mediators who have knowledge of how university and business operate. Finally, the mission of education system needs to be extended towards building cooperative and entrepreneurial culture in the Lithuanian society.

Conceptual normative model of UBC governance in Lithuania

1. Based on empirical research finding and applying simple modelling and logical construction method conceptual normative model of UBC governance in Lithuania was designed. It was built on the presumption that closer relations between universities and business is the prerequisite for the national competitive position on the global market, overcoming modern societal challenges, implementing three-fold university mission, bringing added value to local industry, creating employment and disposable income. Therefore, well-established external and internal national and institutional environment for UBC and innovation needs to be established based on network, knowledge and innovation management perspectives.
2. The conceptual normative model for UBC governance includes the internal and external environment of two major UBC ecosystem participants – universities and business companies. The external UBC environment includes international and

national factors. International factors cover global changes in university, business and public governance sectors during the last decade, internationalisation of studies and R&DI, scientific and cultural migration, multiculturalism, and favorable international geopolitical situation, the initiatives and best practices of foreign countries in UBC governance on the European and national level. The national environment includes socio-economic and socio-cultural aspects including the tradition of UBC, the national mentality behind it, legislation, political system, national business, research, innovation context, associations, communities, non-governmental organisations operating in the country.

3. University internal environment (factors and constituents with regard to UBC) include six major categories: quality of R&DI and studies, university leadership attitude towards UBC and innovation, university interest and engagement in national and international UBC support structures, university internal UBC support structures, UBC-related performance measurement systems, and university preparation for change.
4. The main factors and constituents of business company internal environment include identifying or developing demand for R&DI and specialist competences, business leadership attitude towards UBC and innovation, business interest and engagement in the national UBC support structures, business company internal UBC support structures, UBC-related performance measurement systems and business company preparation for change.
5. The architecture of the conceptual normative model for UBC governance include the evolution of NMP and NMG, the shift from Conventional or Mode 1 to Corporative or Mode 2 approach, the evolution of knowledge management models from the Triple Helix through the Quadruple Helix to the Quintuple Helix models, the shift from the hierarchical to network management, and the integrative approach to Systems, Institutional and Stakeholder theories.
6. The conceptual normative model of UBC governance includes strategic level, operational level, result level, outcome level and impact level. They are an integral part of both internal and external environment for UBC. University internal environment and business company internal environment are interconnected to these levels. Strategic level covers strategic documented national and organizational agendas, the involvement of all UBC ecosystem stakeholders, developing UBC support structures, and resource allocation to UBC by public governance institutions. The operational level refers to UBC performance including human resource, financial management systems. Result level refers to results gained from UBC. The outcome level includes the contribution to university study programmes, R&DI processes, business profit mark-up level caused by UBC. The impact level covers general contribution to socio-economic processes and regional development.

Recommendations to university governance

1. UBC governance has to be included in strategic long-term and operational short-term university governance documents (statutes, strategies, annual action plans, etc.) and widely communicated throughout an organization (via internet, intranet, e-mails, newsletters, word of mouth, etc.) in a positive and opportunity opening way (best

practices, success cases, etc.). This recommendation applies to all public university strategic management including rectorates, senates, councils as well as operational management involving faculties, institutes, laboratories, directorates, centres, services.

2. University governance has to ensure that there are relations established between strategic and operational management levels, minimising the gap between the declarative and the real situation. This recommendation applies to all public university strategic management including rectorates, senates, council as well as operational management including faculties, institutes, laboratories, directorates, centres, services, etc. A centralised work group responsible the correspondence between the declarative and real UBC situation has to be established, annual audits, surveys have to be carried out to evaluate the status quo and the desired outcome.
3. UBC is based on interpersonal interaction, therefore, based on Stakeholder theory the major task for university governance is to develop schemes and structures that motivate individual researchers and students to network with business sector employees aiming to provide concrete cooperation results and outcome that have an impact on overcoming societal challenges. This recommendation applies to all public university strategic management (rectorates, senates, councils, etc.) as well as operational management level (faculties, institutes, laboratories, directorates, centres, services, etc). The best measure to implement the recommendation is UBC element inclusion of into human resource management schemes including employment, remuneration, promotion with an emphasis on concrete results achieved as a consequence of UBC. In addition, university governance has to ensure platforms and schemes for university and business people to meet informally (networking events, business lunches, etc.).
4. Based on Institutional theory and knowledge management perspective university governance needs to develop structures that ensure generation, identification, distribution, application, protection, measurement and commercialisation of knowledge gained from UBC. This recommendation applies to all public university strategic level management (rectorates, senates, and councils). The recommendation can be implemented through the establishment of centralised knowledge, innovation and data repositories and assigning units (library, research office, project office centres, and knowledge and/or technology transfer office, etc.) and concrete persons responsible for the development and implementation of knowledge management. Annual knowledge management reporting to the university strategic and operational management and academic community has to be carried out. Successful cases need to be communicated to the academic community and nationally, recognised and awarded.
5. UBC has to be included in university performance evaluation schemes (individual researcher, department, institute, faculty, laboratory, etc.). This recommendation applies to all public university strategic level management (rectorates, senates, and councils) as well as operational level management (faculties, institutes, laboratories, directorates, centres, services, etc.). Data collection has to be carried out based on individual researcher's performance once per calendar year via electronic online systems. Performance evaluation can be carried out by external international experts who could rank each individual researchers on the scale of five points. All university researchers can be ranked according to the average evaluation score and recognised,

remunerated, awarded, and promoted accordingly. Successful cases and top researchers need to be communicated in the academic community and nationally, recognised and awarded. The performance evaluation of a department, institute, faculty or laboratory can be based on the sum of its members. Funds from the university budget need to be allocated to the units according to the annual performance results.

6. Universities need to develop basic competencies as creative, analytical and reflective thinking, international, inter-disciplinary and inter-sectorial cooperation and entrepreneurship. These elements need to be included into the curriculum of all lifelong educational study programmes. This recommendation applies to all public university strategic management (rectorates, senates, and councils) as well as operational management level (faculties, institutes, laboratories, directorates, centres, services responsible for educational processes, etc.). These competencies need to be introduced into all study programmes of all three study levels. Units and concrete persons need to be assigned to monitor, measure and improve the schemes of competence quality development schemes. The desired competencies need to be widely communicated via organizational documents (strategies, annual activity plans, etc.), media (intranet, newsletter, e-mails) and work of mouth (meetings, training, qualification improvement events, etc.).

Recommendations to business management

1. UBC governance has to be included in strategic and operational business management documents (strategies, annual activity plans, etc.) and widely communicated (via intranet, e-mails, newsletters, work of mouth, etc.) in an organization in a positive and opportunity opening way (through best practices, success cases, etc.). This recommendation applies to all business management on the strategic (CEOs, Boards of Directors, etc.) and operational level (unit, department, etc.) management.
2. Business management has to ensure that there are relations established between strategic and operational management levels, minimising the gap between the declarative and the real situation. This recommendation applies to all business management including strategic (CEOs, Board of Directors, etc.) and operational level (unit, department, etc.) level. A work group responsible the correspondence between the declarative and the real situation has to be established, annual audits, surveys have to be carried out to evaluate the relation between the status quo and the desired outcome.
3. UBC is based on interpersonal interaction, therefore, grounded on Stakeholder theory business companies need to motivate their employees to network with university researchers and students aiming to provide concrete cooperation results that have an impact on solving societal challenges. This recommendation applies to all business strategic management including (CEOs, Board of Directors, etc.) as well as operational level (unit, department, etc.) management. The best mechanism to implement the recommendation is the inclusion of UBC into human resource management schemes including employment, remuneration, and promotion with an emphasis on concrete results achieved as a consequence of UBC. In addition, operational level (units, departments, etc.) management has to ensure platforms for university and business people to meet informally.

4. Based on Institutional theory and knowledge management perspective business companies needs to take a more proactive approach to UBC as a source of knowledge and develop structures that ensure generation, identification, distribution, application, protection, measurement and commercialisation of knowledge gained UBC. This recommendation applies to all business strategic management (CEOs, Board of Directors, etc.). The recommendation can be implemented through the establishment of centralised knowledge, innovation and data repositories and assigning units and concrete persons responsible for the development and implementation of knowledge management and commercialisations. They could be sales or production management office staff. Annual knowledge management reporting to the business strategic and operational management and academic community has to be carried out. Successful cases need to be communicated throughout the business company and beyond, widely recognised and awarded.
5. UBC has to be included in business company performance evaluation schemes (individual employee, department, unit, etc.). This recommendation applies to business company strategic management (CEOs, Board of Directors, etc.) and operational management level (Human Resource department, Finance department, etc.). Data collection has to be carried out based on individual business sector employee level once per calendar year via electronic and/or online systems. Successful cases emphasizing individual input need to be communicated throughout the business company and beyond, widely recognised and awarded. The performance evaluation of a department or unit can be based on the sum of its members. Bonuses need to be provided to the departments and units according to the annual UBC performance results.

Recommendations to public governance institutions liable for UBC

1. UBC governance has to be included in strategic long-term and operational short-term national documents (strategies, agendas, etc.) and widely communicated to general public (via TV, radio, internet portals, public governance websites, national and regional newspapers, magazines, social media, meetings, trainings, events, etc.) in a positive and opportunity opening way (through best practices, success cases, award systems, etc.). This recommendation applies to the Ministry of Education and Science, Research and Studies Monitoring and Analysis Centre (MOSTA) the Ministry of Economy, the Agency of Science, Innovation and Technology (MITA), the Research Council of Lithuania (LMT), the Lithuanian Academy of Science, Parliamentary Committee on Education, Science and Culture.
2. Public governance institutions liable for UBC have to ensure that there are relations established between strategic and operational management levels, minimising the gap between the normative and operational level performance. This recommendation applies to the Ministry of Education and Science, Research and Studies Monitoring and Analysis Centre (MOSTA) the Ministry of Economy, the Agency of Science, Innovation and Technology (MITA), the Research Council of Lithuania (LMT), the Lithuanian Academy of Science, Parliamentary Committee on Education, Science and Culture. The major mechanisms include research evaluation methodology and allocation of funding schemes to universities.

3. UBC is based on interpersonal interaction, therefore, based on Stakeholder theory the major task for public governance is to develop schemes and structures that motivate universities and business, and their employees, in particular, to network aiming to provide concrete cooperation results that have an impact on solving societal challenges. Based on Institutional theory and knowledge management perspective public governance needs to develop structures and systems that promote commercialisation of knowledge gained from UBC. This recommendation applies to the Ministry of Education and Science, Research and Studies Monitoring and Analysis Centre (MOSTA), the Ministry of Economy, the Agency of Science, Innovation and Technology (MITA), the Research Council of Lithuania (LMT). The major mechanisms for implementation include research evaluation methodology and allocation of funding schemes to universities, providing funding for collaborative projects, developing schemes and platforms for university and business people to network, and widely communicating it through mass media (TV, radio, internet portals, public governance websites, national and regional newspapers, magazines, social media, etc.), word of mouth (events, conferences, trainings, etc.).
4. UBC has to be included institutional university performance evaluation including study and R&DI evaluation schemes.This recommendation applies to the Ministry of Education and Science and the Research Council of Lithuania (LMT). The major mechanisms for implementation include research evaluation methodology and allocation of funding schemes to university research, Ph.D. and Master level studies.
5. Public educational institutions of all levels need to development basic competencies as creative, analytical and reflective thinking, international, inter-disciplinary and inter-sectorial cooperation and entrepreneurship. This recommendation applies to the Ministry of Education and Science. These competencies need to be introduced into all study programmes of all three study levels. The desired competencies need to be widely communicated via national strategic documents (long-term and short-term strategies, university annual activity plans, etc.), (TV, radio, internet portals, public governance websites, national and regional newspapers, magazines, social media, etc.), word of mouth (events, conferences, trainings, etc.).

Recommendations for further research

1. Such areas as UBC ecosystem management with regard to anthropological and cultural aspects will bring added value to UBC research.
2. UBC research with regard to societal values and identity will be scholarly interesting and beneficial.
3. Research on shifting university researchers‘ identity should also provide added value to UBC research as it could reveal how do individuals sense themselves and act in work situations, their rationale and justification for certain actions.
4. Research on UBC from the perspective of security, justice, human rights can be applied to overcoming modern societal challenges.
5. UBC governance research with regard to the expansion of information and communication technologies and social media will be scholarly interesting and beneficial to society.

6. UBC governance in the light of quality of life, smart, sustainable and inclusive societies will also bring added value to academic societies and the general public.
7. UBC as an integrative means between different academic disciplines and economic sectors emphasizing the role of social sciences and humanities in developing UBC practice should be an interesting and beneficial research object.
8. Longitudinal research on the formation and development of the existing of UBC cooperative patterns from the historical perspective would contribute to UBC research.
9. Research on the ability to develop UBC partnerships from juvenile friendships, networks and cooperation experiences such as, for example, high school or university classmates, neighbourhoods, sports or hobby clubs, early career peers, would make an enormous contribution and insights to the existing UBC research.
10. Demographic and intergenerational studies with regard to UBC ecosystems management would also contribute an additional value to the existing body of UBC theoretical and empirical research.
11. Research on gender issues impact on UBC practice would give added value to UBC research.
12. The solution of the environmental issues, climate change and promotion of sustainable communities with regard to UBC governance could also be the object of theoretical and empirical research.
13. Research on the relations between UBC in overcoming societal challenges of health and healthy living would be an interesting and beneficial future research direction.
14. Research on the relationship between UBC, mediation and sustainable dispute resolution would be an interesting research object.
15. UBC research with regard to multiculturalism would help Europe in solving refugee issues.

REFERENCES

1. Abreu, M.; Grinevich, V.; Hughes, A.; Kitson, M. (2009). *Knowledge Exchange between Academics and Business, Public and Third sectors.* Cambridge: Centre for Business Research.
2. Acs, Z. J.; Plummer, L. A. (2005). Penetrating the knowledge filter in regional economies. *The Annals of Regional Science* 39: (pp. 439–456).
3. Adams, S.B. (2009). Follow the money: engineering at Stanford and US Berkeley during the rise of Silicon Valley. *A Review of Science, Learning and Policy*, 47(4) (pp. 367–390).
4. Agranoff, R. (2007). *Managing Within Networks: Adding Value to Public Organisations.* Washington: Georgetown University Press.
5. Agranoff R.; McGuire.M. (2003). *Collaborative Public Management. New Strategies for Local Governments.* Washington: Georgtown University Press.
6. Agrawal, A.; Henderson, R.M. (2002). Putting patents in context: exploring knowledge transfer from MIT. *Management Science,* 48 (pp. 44–80).
7. Alfonso, A.; Ramirez, J.J.; Diaz-Puente, J.M. (2012). University-industry cooperation in the education domain to foster competitiveness and employment. *Procedia-Social and Behavioral Sciences*, 46 (pp.3947–3953).
8. Audretch, D.B.; Erdem, D.K. (2004). Determinants of scientist entrepreneurship: an integrative research agenda. In series *Papers on entrepreneurship, growth and public policy*, 4204. DOI: 10.1007/0-23622-8_6.
9. Augustinaitis, A. (2003). Valdymo komunikacija: žinių visuomenės įtaka viešajam administravimui. *Informacijos mokslai*, 27 (pp. 9–22).
10. Augustinaitis, A. (2004). Žinių visuomenės raštingumas. *Informacijos mokslai*, 2004, t. 31, p. 18-27.
11. Augustinaitis, A. (2005). Valdymo kaitos kryptys žinių visuomenėje. *Informacijos mokslai*, 2005, t. 33, p. 9-17.
12. Azagra-Caro, et al. (2006). Faculty support for the objectives of university–industry relations versus degree of R&D cooperation: the importance of regional absorptive capacity. *Research Policy,* 35 (pp. 37–55).
13. Azagra-Caro, J.M. (2007). What type of faculty member interacts with what type of firm? Some reasons for the delocalisation of university–industry interaction, *Technovation*, 27(11) (pp. 704–715).
14. Axelrod, R.; Dawkins, R. *The Evolution of Cooperation*. New York: Basic Books, 1984.
15. Bakanauskas, A. ir kt. (2008). *Žinių visuomenės formavimas: patirtis, problemos, perspektyvos:* monografija. Kaunas: VDU leidykla.
16. Balconi, M. Laboranti, A. (2006). University-industry interactions in applied research: the case of microelectronics. *Research Policy,* 10(35) (pp. 1616–1630).
17. Baležentis, A. (2007). Organizacijos inovacinio lauko veiksnių analizė. *Viešoji politika ir administravimas*, 22 (pp. 41–46).
18. Baležentis, A. Daujotaitė, K. (2009). Suminis inovacijų indeksas ir inovacijų plėtra Lietuvoje. *Personalo vadyba*, 3. (91), (pp. 7–18).
19. Barzelay, M. (1992). *Breaking through Bureaucracy: A New Vision for Managing in Government.* Berkeley: University of California Press.

20. Becker, W. Dietz, J. (2004). R&D co-operation and innovation activities of firms—evidence for the German manufacturing industry. *Research Policy*, 33(2) (pp. 209–223).
21. Bekkers, R.; Bodas Freitas, I.M. (2008). Analysing knowledge transfer channels between universities and industry: to what degree do sectors also matter? *Research Policy,* 37(3) (pp. 1837–185).
22. Bergh, D. D.; Ketchen, D.J. *Building Methodological Bridges*. Bingley: Emerald, 2011
23. Bess, J.L.; Dee J.R. (2008). *Understanding College and University Organization*. Virginia: Stylus Publishing.
24. Bercovitz, J.; Feldman, M. (2008). Academic entrepreneurs: organizational change at the individual level. *Organization Science*, 19 (pp. 69–89).
25. Berg, B.L. (2007). *Qualitative Research Methods for Social Sciences*. New York: Pearson Education, Inc.
26. Bergquist, W.H.; Pawlak, K. (2007). *Engaging the Six Cultures of the Academy*. New Jersey: Jossey-Bass.
27. Berman, E.P. (2012). *Creating the Market Univeristy: How Academic Science Became an Economic Engine*. Woodstock: Princeton University Press.
28. Bersėnaitė, J.; Tijūnaitienė, R.; Šaparnis, G. (2012). Verslo ir aukštojo mokslo organizacijų bendradarbiavimo sąlygos vykdant organizacinius pokyčius. *Ekonomika ir vadyba: aktualijos ir perspektyvos*, 4(28) (pp. 154–167).
29. Boardman, P.C. (2008). Beyond the stars: the impact of affiliation with university biotechnology centers on the industrial involvement of university scientists. *Technovation,* 28 (pp. 291–297).
30. Boardman, P.C. (2009). Government centrality to university–industry interactions: university research centers and the industry involvement of academic researchers. *Research Policy*, 38 (pp. 1505–1516).
31. Boardman, P.C.; Ponomariov, B.L. (2009). University researchers working with private companies. *Technovation,* 29 (pp. 142–153).
32. Bonaccorsi, A.; Piccaluga, A. (1994). A theoretical framework for the evaluation of university-industry relationships, *R&D Management*, 24(3) (pp. 229–247).
33. Bozeman, B.; Gaughan, M. (2007). Impacts of grants and contracts on academic researchers' interactions with industry. *Research Policy,* 36 (pp. 694–707).
34. Bovaird, T. (2007). Beyond engagement and participation: user and community coproduction of public services. *Public Administration*, 67(5) (pp. 846–860).
35. Bramwell, A.; Wolfe, D. A. (2008). Universities and Regional Economic Development: the Entrepreneurial University of Waterloo. *Research Policy*, 37(8) (pp. 1175–1187).
36. Brannic, T.; Coghlan D. *Doing Action Research in Your Own Organization*, 4th Edition. London: Sage Publications Ltd, 2014.
37. Breschi, S.; Lissoni, F.; Montobbio, F. (2007). The scientific productivity of academic inventors: new evidence from Italian data. *Economics of Innovation and New Technology,* 16 (pp. 101–120).
38. Bryman, A. (2008). Of methods and methodology. *Qualitative Research in Organisations and Management: An International Journal*, 3(2) (pp. 159–168).
39. Burgess, R. (1995). *In the Field: an Introduction to Field Research*. London: Routledge.
40. Cameron, G.; Wallace, Ch. (2007). Technology shops: efficient pricing in business-university collaborations. *Economics of Innovation and New Technology*, 16 (1).

41. Carayannis, E.G.; Barth, T.D.; Campbell, D.FJ. (2012). The Quintuple Helix Innovation Model: Global Warming as a challenge and driver for innovation. *Journal of Innovation and Entrepreneurship (a SpringerOpen Journal), 1(2).*
42. Cardona P.; Rey C. (2004). *Misijomis paremta vadyba*. Vilnius: Vaga, iš anglų k. vertė Ramonienė, L.; Zagorskas, S.
43. Chatterton, P.; Goddard, J. (2000). The response of higher education institutions to regional needs. *European Journal of Education*, 35(4) (pp. 475–496).
44. Chatterton, P.; Goddard, J. (2000). The response of higher education institutions to regional needs. *European Journal of Education*, 35(4) (pp. 475–496).
45. Chesbrough, H. W. (2003). *Open innovation: The New Imperative for Creating and Profiting from Technology*. Boston: Harvard Business School Press.
46. Cibulskienė, D. et al. (2010). *Mokslininkų, tyrėjų organizacijų ir verslo sektoriaus bendradarbiavimo modelis*: mokslo studija. Šiauliai: Šiaurės Lietuva.
47. Clarysse, B. et al. (2005). Spinning out new ventures: a typology of incubation strategies from European research institutions. *Journal of Business Venturing,* 20 (pp. 183–216).
48. Cohen, W.M.; Nelson, R.R.; Walsh, J.P. (2002). Links and impacts: the influence of public research on industrial R&D. *Management Science*, 48(1) (pp. 1–23).
49. Cronk, L.; Leech, B.L. (2012). *Meeting at Grand Central: Understanding the Social and Evolutionary Roots of Cooperation*. New Jersey: Princeton University Press.
50. Cummings, J.L.; Teng, B.S. (2003). Transferring R&D knowledge: the key factors affecting knowledge transfer success. *Journal of Engineering Technology Management,* 20 (pp. 39–68).
51. Currie, J.; Vidovich, L. (2000). Privatization and competition policies for Australian universities. *International Journal of Educational Development,* 20 (pp. 135-151).
52. Czarniawska, B. (2004). *Narratives in Social Science Research. Introducing Qualitative Methods.* London: Sage Publications.
53. Czinkota, M.; Pinkwart, A. (2012). International business research and the new role of universities (there is sunshine above the clouds). *Thunderbird International Business Review*, 54(2) (pp. 253-261).
54. D' Este, P.; Patel, P. (2007). University-industry linkages in the UK: what are the factors underlying the variety of interactions with industry? *Research Policy,* 36 (pp. 1295–1313).
55. D'Este, P.; Fontana, R (2007). What drives the emergence of entrepreneurial academics? A study of collaborative research partnerships in the UK. *Research Evaluation*, 16(4), (pp. 257-270).
56. D'Este, P.; Perkmann, M. (2011). Why do academics engage with industry? The entrepreneurial university and individual motivations. *The Journal of Technology Transfer,* 36 (pp. 316–339).
57. D'Este, P.; Iammarino, S. (2010). The spatial profile of university-business research partnerships. *Papers in Regional Science,* 89(2) (pp. 335-350).
58. Daft, R. L. (2003) *Management* (6th ed). Toronto: Thomson Learning.
59. Dalton, R.J. (2005). The social transformation of trust in government. *International Review of Sociology,* 15(1) (pp. 133–154).
60. Dan, C. M. (2012). The third mission of universities in the development strategy of Vienna city. *Informatica Economica*, 6(4) (pp. 49–56).
61. Dante Di G.; Scott S. (2003). Why do some universities generate more start-ups than others? *Research Policy,* 32 (2) (pp. 209–227).

62. Datta, S.; Saad, M. (2008). Social capital and university–industry–government networks in offshore outsourcing – the case of India. *Technology Analysis & Strategic Management*, 20(6) (pp. 741–754).
63. Denhardt, R.B.; Denhardt, J.V. (2008). *Managing Human Behavior in Public and Nonprofit Organisations*. Sage Publications, Inc.
64. Denhardt R.B.; Denhardt J.V. The new public service: serving rather than steering. *Public Administration Review*. 2000, Vol. 60, No 6, p. 549–559.
65. Dewick, P.; Miozzo, M. (2004). Networks and innovation: sustainable technologies in Scottish social housing. *R&D Management,* 34 (4) (pp. 323–333).
66. Diez, J.D. (2002). Metropolitan innovation systems: a comparison between Barcelona, Stockholm, and Vienna. *International Regional Science Review,* 25 (1) (pp. 63–85).
67. DiMaggio, P.J.; Powell, W.W. (1983). The iron cage revisited: institutional isomorphism and collective rationality in organizational fields. *American Sociological Review,* 48(2) (pp. 147-160).
68. Doloreux, D. (2004). Regional networks of small and medium sized enterprises: evidence from the metropolitan area of Ottawa in Canada. *European Planning Studies,* 12 (2) (pp. 173–189).
69. Eom B.Y.; Lee K. (2010). Determinants of industry-academy linkages and their impact on firm performance: the case of Korea as a latecomer in knowledge industrialization. *Research Policy,* 39 (pp. 625–639).
70. Etzkowitz, H.; Leydesdorff (eds). (1997). *Universities in the Global Economy: A Triple Helix of University-Industry-Government Relations*. London: Cassell Academic.
71. Etzkowitz, H.; Leydesdorff, L. (2000). The dynamics of innovation: from National Systems and "Mode 2" to a Triple Helix of university-industry-government relations. *Research Policy*, 29 (2) (pp. 109–123).
72. Etzkowitz, H.; Kemelgor, C.; Uzzi, B. (2000). *Athena unbound: the advancement of women in science and technology*. Cambridge: Cambridge University Press.
73. Etzkowitz, H. (2002). Incubation of incubators: innovation as a triple helix of university–industry–government networks. *Science and Public Policy*, 29(2) (pp. 115–28).
74. Evangelista, R. (2000). Sectoral patterns of technological change in services. *Economics of Innovation and New Technology*, 9(3) (pp. 183–221).
75. Fabrizio, K.R.; Di Minin, A. (2008). Commercializing the laboratory: faculty patenting and the open science environment. *Research Policy,* 37 (pp. 914–931).
76. Faerman, S. R.; Mccaffrey, D.P., & Slyke, D.M.V. (2001). Understanding inter-organizational cooperation: public–private collaboration in regulating financial market innovation. *Organization Science*, 12(3) (pp. 372–388).
77. Feldman, M.P.; Desrochers, P. (2003). "Research Universities and Local Economic Development: Lessons from the History of the Johns Hopkins University." *Industry & Innovation*, 10(1) (pp. 5-24).
78. Fitzek, F. H.; Katz, M. D. (eds.). *Cooperation in Wireless Networks: Principles and Applications*. Amsterdam: Springer, 2006.
79. Fontana, R.; Geuna, A.; Matt, M. (2006). Factors affecting university-industry R&D projects: the importance of searching, screening and signalling. *Research Policy,* 35 (2), (pp. 309–323).

80. Freel, M. (2002). On regional systems of innovation: Evidence from the west Midlands. Environment and Planning C: *Government and Policy, 20(5)* (pp. 633–654).
81. Freeman, E.R.; Harrison J.S.; Wicks, A. (2007). *Managing for Stakeholders*. New Haven: Yale University Press.
82. Freeman, E.R. et al. (2010). S*takeholder Theory – The State of the Art.* Cambridge: Cambridge University Press.
83. Freeman, E.R. (2007). Managing for Stakeholders. http://ssrn.com/abstract=1186402 or http://dx.doi.org/10.2139/ssrn.1186402
84. Friedman, J.; Silberman, J. (2003). University technology transfer: do incentives, management, and location matter? *Journal of Technology Transfer,* 28 (pp. 17–30).
85. Fristch, M. (2001). Cooperation in regional innovation systems. *Regional Studies*, 35(4) (pp. 297–307).
86. Fritsch M.; Lukas R. (2001). Who cooperates on R&D? *Research Policy,* 30 (pp. 297–312).
87. Fukugawa, N. (2006). Determining factors in innovation of small firm networks: a case of cross industry groups in Japan. *Small Business Economics,* 27(2–3) (pp. 181–193).
88. Galinienė, B. et al. (2007). *Ekonomikos modernizavimas: nauji iššūkiai ir ekonominės politikos prioritetai.* Vilnius: VU leidykla.
89. Gasset, J.O. (2009). *The Mission of the University* (p. 7). New Jersey: Transaction Publishers.
90. Gawel, A. (2014). Business collaboration with universities as an example of corporate social responsibility – a review of case study collaboration methods. *Poznan University of Economics Review*, 14(1) (pp. 20-30).
91. Gerring, J. (2012). Social Science Methodology: a Unified Framework. Cambridge: Press.
92. Gibbs, P. (2011). An Aristotelian model for ethical higher education marketing: The role of practical wisdom. *Journal of Marketing for Higher Education*, 21(2) (pp. 203-214).
93. Giedraitytė, V.; Raipa, A. (2012) Rizikos valdymas viešojo sektoriaus inovaciniuose procesuose // *Viešoji politika ir administravimas*. Vilnius: Mykolo Romerio universitetas. V. 11, Nr.4, p. 607-618.
94. Giuliani, E.; Arza, V. (2009). What drives the formation of 'valuable' university-industry linkages? Insights from the wine industry. *Research Policy*, 38 (pp. 906–921).
95. Giuliani, E.; Morrison, A.; Pietrobelli, C.; Rabellotti, R. (2010). Who are the researchers that are collaborating with industry? An analysis of the wine sectors in Chile, South Africa and Italy. *Research Policy,* 39(6) (pp. 748–761).
96. Godin, B.; Gingras, Y. (2000). The place of universities in the system of knowledge production. *Research Policy,* 29(2) (pp. 273–278).
97. Goldfarb B.; Henrekson, M. (2003). Bottom-up versus top-down policies towards the commercialization of university intellectual property. *Research Policy*, 32 (p. 639–658).
98. Goldsmith, S.; Eggers, W. (2004). *Governing by Network. The New Shape of the Public Sector*. Washington: The Brooking Institution.
99. Goldstein, H.A. (2010). The "entrepreneurial turn" and regional economic development mission of universities. *Annals of Regional Science*, 44(1) (pp. 83–109).
100. Goktepe-Hulten, D. (2010). University–industry technology transfer: who needs TTOs? *International Journal of Technology Transfer & Commercialisation*, 9 (pp. 40–52).

101. Göransson, B.; Maharajh, R.; Schmoch, U. (2009). Introduction: New challenges for universities beyond education and research. *Science & Public Policy (SPP)*, 36(2) (pp. 83–84).
102. Gražulis, V.; Valickas, A.; Dačiulytė, R.; Sudnickas, T. (2012). *Darbuotojas organizacijos koordinačių sistemoje: žmogiškojo potencialo vystymo perspektyvos:* mokslo studija. Vilnius: Mykolo Romerio universiteto leidyba.
103. Gražulis, V. (2014). *Komandinis darbas organizacijose:* mokslo studija. Vilnius: Mykolo Romerio universitetas.
104. Gregersen, B.; Linde, L.; Rasmussen, J.G. (2009). "Linking between Danish universities and society". *Science and Public Policy.* 36 (2) (pp. 151–156).
105. Grundmann, R. (2012). *The Power of Scientific Knowledge. From Research to Public Policy.* Cambridge: Cambridge University Press.
106. Guan, J.; Zhao, Q. (2013). The impact of university-industry collaboration networks on innovation in nanobiopharmaceuticals. *Technological Forecasting & Social Change,* 80 (pp. 1271–1286).
107. Gudelienė, N. (2013). Shifting university values, mission and organizational culture: a dilemma for leadership // Social media: challenges and opportunities for education in modern society: research papers. Vilnius: Mykolas Romeris University Publishing. 1, (pp. 78–82).
108. Gudelienė, N.; Justickis, V.; Plenta, J. (2012). New medical knowledge: what socio-managerial mechanisms enhance its application in health care practice? *Societal innovations for* global *growth*, 1(1) (pp. 906–926). Vilnius: Mykolas Romeris University Publishing.
109. Gudelis, D.; Rozenbergaitė, V. (2004). Viešojo ir privataus sektorių partnerystės galimybės. *Viešoji politika ir administravimas*, 8 (pp. 58–73). Vilnius: LTU Leidybos centras.
110. Gudelis, D. (May 23–26, 2012). Network governance and public policy // Public administration East and West: twenty years of development. P*resented papers from the 20th NISPAcee Annual Conference* (pp. 1–12). Republic of Macedonia Bratislava: NISPAcee Press.
111. Gudelis, D.; Guogis, A. (2011). Integrating public and business management: a model of interaction between public and private sectors // International review on public and nonprofit marketing. Heidelberg: Springer Verlag.
112. Guerrero, M.; Kirby, D.; Urbano, D. (2011). Making universities a model for entrepreneurial development. *Canadian Journal of Administrative Sciences*, 28 (pp. 302–316).
113. Gulbrandsen, M.; Smeby, J-Ch. (2005). Industry funding and university professors' research performance. *Research Policy,* 34(6) (pp. 932–950).
114. Gumport, P.J. (2000). Academic Re-structuring: Organizational change and institutional imperatives. *Higher Education*, (pp. 67–91).
115. Gunasekara, C. (2004). Universities and communities: a case study of change in the management of a university. *Prometheus*, 22(2) (p. 203).
116. Gupta, N.; Kemelgor, C.; Fuchs, S.; Etzkowitz, H. (2005). Triple burden on women in science. A cross-cultural analysis. *Current Science*, 89 (p. 1382).
117. Haeussler, C.; Colyvas, J.A. (2011). Breaking the ivory tower: academic entrepreneurship in the life sciences in UK and Germany. *Research Policy, 40* (pp. 41–54).
118. Hagedoorn, J. (2002). Inter-firm R&D partnerships: an overview of patterns and since 1960. *Research Policy.* 31(4) (pp. 477–492).
119. Haiyan, W.; Yuan, Z. (2009) University-owned enterprises as entry point to the knowledge economy in China. *Science & Public Policy (SPP)*, 36(2) (pp. 103–108).

120. Hall at al. 2001. Interdisciplinary education and teamwork: a long and winding road. *Medical Education,* 35(9) (pp. 867–875).
121. Hammersley, M. (2011). Methodology:Who Needs it? London: Sage Publications, 2011.
122. Hartley J. (2005). *Creative Industries*. Oxford: Blackwell Publishing Ltd.
123. Havas, A. (2008). Devising futures for universities in a multi-level structure: a methodological experiment. *Technological Forecasting & Social Change*, 75.
124. Hazelkorn, E. (2005). *University Research Management: Developing Research in Institutions*. Paris: OECD.
125. Hemsley-Brown J. (2011). Market heal thyself: the challenges of a free market in higher education. *Journal of Marketing for Higher Education*, 21(2) (pp. 115–132).
126. Hewitt-Dundas, N. (2013). The role of proximity in university-business cooperation for innovation. *The Journal of Technology Transfer,* 38 (2) (pp. 93–115).
127. Hoang, H.; Antoncic, B. (2003). Network based research in entrepreneurship: a critical review. *Journal of Business Venturing*, 18 (2) (pp. 165–187).
128. Holland, A. (2001). Toward a definition and characterization of the engaged university. *Metropolitan Universities*, 2(3) (pp. 20–9).
129. Hood, C. (1991). A public management for all seasons? *Public Administration,* 69(1) (pp. 4–5).
130. Hunsaker, J.S. (2010). Fundraising and values: when do you say "no" to money. *Journal of Educational Leadership*, 13 (4).
131. Inzelt, A. (2004). The evolution of university-industry-government relationships during transition. *Research Policy*, 33(6–7) (pp. 975–995).
132. Younghwan, K.; Wonjoon, K.; Taeyong, Y. (2012). The effect of the triple helix system and habitat on regional entrepreneurship: empirical evidence from the US. *Research Policy*, 41 (1) (pp. 154-166).
133. Jaeger A.; Kopper J. (2014). Third mission potential in higher education: measuring the regional focus of different types of HEIs. Rev Reg Res 34:95–118 DOI 10.1007/s10037-014-0091-3.
134. Jain, S.; George, G.; Maltarich, M. (2009). Academics or entrepreneurs? Investigating role identity modification of university scientists involved in commercialization activity. *Research Policy,* 38 (pp. 922–935).
135. Jensen, R.; Thursby, J.G.; Thursby, M.C. (2003). The disclosure and licensing of university inventions: the best we can do with the st we get to work with. *International Journal of Industrial Organization,* 21 (pp. 1271–1300).
136. Jucevičius, G.; Kriaučionienė, M.; Jucevičienė, P. (2009). Towards empowerment of social and technological innovations. Socialiniai mokslai, 1, p. 46–57.
137. Jucevičius, R.; Kinduris, V. (2011). Knowledge networks for innovation: motives and benefits. *Socialiniai mokslai*, 4, p. 74.
138. Kaplan, R.S., Norton, D.P. (2001). *The Strategy-focused Organization: How Balanced Scorecard Companies Thrive in the New Business Environment.* Boston: Harward Business Press.
139. Kaziliūnas, A. (2004). Visuomenei teikiamų paslaugų kokybės ir organizacinės kultūros sąveika. *Viešoji politika ir administravimas*, 9, p. 71–78.
140. Kaziliūnas, A. (2006). *Kokybės analizė, planavimas ir auditas:* monografija. Vilnius: Mykolo Romerio universiteto Leidybos centras.

141. Kaziliūnas, A. Problems of auditing using quality management systems for sustainable development of organisations // *Technological and economic development of economy: Baltic journal on sustainability*. Vilnius: Technika. 2008, 14(1), (pp. 64–75).
142. Kaziliūnas, A (2011). Development of knowledge model for effective implementation of quality management programmes // Public policy and administration. Kaunas: Kauno technologijos universitetas. 2011, 10 (4), (pp. 577–588).
143. Keast, R., Brown, K., & Mandell, M. (2007). Getting the right mix: Unpacking integration, meanings and strategies. *International Public Management Journal*, 10(1), (pp. 9–34).
144. Kickert, W.J.M.; Koppenjan, J.F.M. (1999). Public management and network management: An Overview. In *Managing Complex Networks: strategies for the public sector*. London: Sage publications.
145. Kickert, W.J.M.; Klijn, E-H.; Koppenjan, J.F.M. (1997). *Managing Complex Networks. Strategies for Public Sector*. London: Sage Publications.
146. Kim, T. (2008). Changing university governance and management in the U.K. and elsewhere under market conditions: issues of quality assurance and accountability. *Intellectual economics*, 2 (4).
147. Kiškienė, A. (2010). *Mokslo žinių ir technologijų perdavimo politika Lietuvoje (daktaro disertacija).* Vilnius: Mykolo Romerio universiteto leidykla.
148. *Klasterių studija*. 2012. Vilnius: Žinių ekonomikos forumas.
149. Klofsten, M.; Jones-Evans, D. (2000). Comparing academic entrepreneurship in Europe—the case of Sweden and Ireland. *Small Business Economics,* 14 (p. 299).
150. Knoben J. (2008). *Firm Mobility and Organizational Networks Innovation, Embeddedness and Economic Geography.* Lypiatts: Edward Elgar Publishing Limited.
151. Koliba, C.; Meek, J. W.; Zia, A. (2011). *Governance Networks in Public Administration and Public Policy*. USA: Taylor and Francis Group.
152. Koppenjen, J.F.M. (2005). The formation of public-private partnerships: lessons from nine transport infrastructure projects in Netherlands. *Public Administration*, 83(1) (pp. 135–157).
153. Lan, Z.; Rosenbloom, D. H. (1992). Public administration in transition. *Public Administration Review,* 52(6) (pp. 535–537).
154. Landry, R.; Amara, N.; Saïhi, M. (2007). Patenting and spin-off creation by Canadian researchers in engineering and life sciences, *Journal of Technology Transfer*, 32 (pp. 217–249).
155. Landry, R.; Nabil, A.; Ouimet, M. (2005). A resource-based approach to knowledge-transfer: evidence from Canadian university researchers in natural sciences and engineering. In*: Paper Presented at the DRUID Tenth Anniversary Summer Conference, Copenhagen, Denmark.*
156. Landry R. et al. (2010). Evidence on how academics manage their portfolio of knowledge transfer activities. *Research Policy*, 39(10) (pp. 1387–1403).
157. Lane, Jan-Erik (2000). *New Public Management.* London: Routledge.
158. Lanskoronskis, M. (2009). *Modelling University Research Management In theContext of Transformation Process (daktaro disertacija).* Kaunas: ISM University of Management and Economics.
159. Leichteris, E. (2011). *Mokslo ir technologijų parkų konkurencingumo vertinimo modelis (daktaro disertacija).* Vilnius: Mykolo Romerio universiteto leidykla.

160. Lin, Min-Wei; Bozeman, B. (2006). Researchers' industry experience and productivity in university-industry research centers: A: 'scientific and technical human capital' explanation. *Journal of Technology Transfer*, 31 (pp. 269–290).

161. Link, A.N.; Siegel, D.S.; Bozeman, B. (2007). An empirical analysis of the propensity of academics to engage in informal university technology transfer. *Industrial and Corporate Change* 16 (pp. 641–655).

162. Link, A.N.; Scott, J.T.; Siegel, D.S. (2003). The economics of intellectual property at universities: an overview of the special issue. *International Journal of Industrial Organization,* 21 (pp. 1217–1225).

163. Lissoni, F.; Llerena, P.; McKelvey, M.; Sanditov, B. (2008). Academic patenting in Europe: new evidence from the KEINS database. *Research Evaluation,* 17(2) (pp. 87–102).

164. Lissoni, F.; Llerena, P.; McKelvey, M.; Sanditov, B. (2009). Academic patenting in Europe: evidence on France, Italy and Sweden from the KEINS database. In monograph book*: Learning to Compete in European Universities,* chapter 8 (pp. 187–218). Cheltenham: Edward Elgar.

165. Lydeka, Z.; Zakarevičius, P.; Žukauskas, P. (2008). Mokslinių tyrimų organizavimo ir finansavimo tobulinimo kryptys Lietuvoje. *Organizacijų vadyba: sisteminiai tyrimai*, 46 (pp. 71–84).

166. Lockett, A.; Wright, M.; Franklin, S. (2003). Technology transfer and universities' spin-out strategies. *Small Business Economics*, 20(2), (pp. 185–200).

167. Lockett, A.; Wright, M. (2004). Resources, capabilities, risk capital and the creation of university spin-out companies: technology transfer and universities spin-out strategies. *Paper presented at the technology transfer society meetings*. Albany, NY.

168. Lockett, A.; Wright. M. (2005) Resources, capabilities, risk capital and the creation of university spin-out companies.*Research Policy*, 34(7) (pp. 1043–1057).

169. Loeffler, E. (2009). A future research agenda for co-production: overview paper. Swindon: Local Authorities Research Council Initiative.

170. Lopez F., et al. (2014). Are firms interested in collaborating with universities? An open-innovation perspective in countries of the South West European Space. *Service Business,* 9(4) (pp. 637–662).

171. Louis, K.S.; Jones, L.M.; Anderson, M.S.; Blumenthal, D.; Campbell, E.G. (2001). Entrepreneurship, secrecy, and productivity: a comparison of clinical and non-clinical life sciences faculty. *The Journal of Technology Transfer,* 26(3) (pp. 233–245).

172. Mačerinskienė, I.; Aleknavičiūtė, R. (2015). Comparative evaluation of national intellectual capital measurement models // Business: theory and practice / Vilnius: Technika.

173. Mačerinskienė, I., Survilaitė, S. (2011). Company's value added and its intellectual capital coherence // Business: theory and practice. Vilnius: Technika. Vol. 12, no. 2 (2011), (pp. 183–192).

174. Mancinelli, S.; Mazzanti, M. (2008). Innovation, networking and complementarity, Evidence on SME performances for a local economic system in North-Eastern Italy. *Special issue paper,* 43 (pp. 567–597), DOI 10.1007s00168-008-0255-6.

175. Martin, S.; Scott, J.T. (2000). The nature of innovation market failure and the design of public support for private innovation. *Research Policy,* 29 (pp. 437–447).

176. Mansfield E.; Lee, J.V. (1996). The modern university: contributor to industrial innovation and recipient of industrial R&D support. *Research Policy,* 25(7) (pp. 1047–1058).

177. McNabb, D.E. (2009). *The New Face of Government. How Public Managers Are Forging a New Approach to Governance*. US: Auerbach Publications/Taylor &Francis Group.
178. Meyer-Krahmer, E.; Schmoch, U. 1998. Science-based technologies university-industry interractions in four fields. *Research Policy,* 27(8) (pp. 835–852).
179. Melnikas, B. (2011). *Transformacijų visuomenė. Ekonomika, kultūra, inovacijos, internacionalizacimo procesai*. Vilnius: Technika.
180. Melnikas, B. (2013). Žiniomis grindžiamos visuomenės kūrimas: globalizacija, darni plėtra, ekonominiai sprendimai: monografija. Vilnius: Vilniaus universiteto leidykla.
181. Metcalfe, A. (2010). Revisiting academic capitalism in Canada: no longer the exception. *Journal of Higher Education*, 81(4) (pp. 489–514).
182. Mikulskienė, B. (2013) (ats. red.). *Interesų raiška viešojo valdymo institucijose: švietimo ir darbo grupių veiklos palyginamoji analizė*: mokslo studija. Vilnius: Mykolo Romerio universiteto leidybos centras.
183. Miller, K.I.; Monge, P. (1986). Participation, satisfaction, and productivity: a meta-analytic review. *Academy of Management Journal*, 29(4) (pp. 727–753).
184. Molas-Gallart, J.; Ammon S.; Pari P.; Alister S.; Xavier D. (2002). Measuring third stream activities. *Final Report to the Russell Group of Universities.* Brighton: SPRU.
185. Molas-Gallart, J.; Castro-Martínez, E. (2007). Ambiguity and conflict in the development of 'Third Mission' indicators. *Research Evaluation*, 16(4) (pp. 321–330).
186. Molenaar, P.C.M., Lerner R. M., Newell, K.M. (2014). *Handbook of developmental systems theory and methodology / New York (N.Y.)*. London: Guilford Press.
187. Murphy, R. Choice, Choice: Cooperation, Enterprise, and Human Action. USA: Independent Institute, 2015.
188. Nadler, D. A.; Hackman, J. R.; Lawler, E. E. (1979). *Managing behavior in organisations*. Boston: Little-Brown.
189. Ndonzuau, F. N.; Pirnay, F.; Surlemont, B. (2002). A stage model of academic spin-off creation. *Technovation*, 22 (pp. 281–289).
190. Niclas, Luhmann. (2013). *Introduction to systems theory*. Cambridge: Polity Press.
191. Nieto, M.J., Santamar´ıa, L. (2007). The importance of diverse collaborative networks for the novelty of product innovation. *Technovation,* 27(6–7) (pp. 367–377).
192. Niven, P. (2003). *Balanced Scorecard Step by Step for Governments and Nonprofits*, New Jersey: John Wiley and Sons.
193. Nowotny, H.; Scott, P.; Gibbons, M. (2001). *Re-thinking science: knowledge and the public in an age of uncertainty*. Cambridge: Polity Books.
194. O'Shea, R.P.; Allen, T.J.; Chevalier, A.; Roche, F. (2005). Entrepreneurial orientation, technology transfer and spinoff performance of US universities. *Research Policy*, 34 (pp. 994–1009).
195. O'Shea, R.; Chugh, H.; Allen, T. (2008). Determinants and consequences of university spinoff activity: a conceptual framework. *Journal of Technology Transfer*, 33 (pp. 653–666).
196. O'Toole Jr.; Laurence, J.; Meier, K (2004). Desperately Seeking Selznick: Cooperation and the Dark Side of Public Management in Networks. *Public Administration Review*, Vol. 64, No 6 (pp. 681–693).
197. Osborne, D.; Gaebler, T. (1992). *Reinventing Government: How Entrepreneurial Spirit is Transforming the Public Sector.* Massachusetts: Addison-Wesley Publishing Company, Inc.

198. Osborne, S.P., Brown, K. (2005). *Managing Change and Innovation in Public Service Organisations.* UK: Taylor&Francis Ltd.
199. Outhwaite, W.l Turner, S.P. (eds.). The SAGE Handbook of Social Science Methodology. London: SAGE Publications, 2007.
200. Owen-Smith, J.l Powell, W.W. (2001). To patent or not: faculty decisions and institutional success at technology transfer. *Journal of Technology Transfer*, 26 (pp. 99–114).
201. Patton M.Q. (2002). *Qualitative research & evaluation methods* (3rd ed). San Francisco: Sage.
202. Perkmann, M. et al. (2013). Academic engagement and commercialisation: A review of the literature on university-industry relations. *Research Policy*, 42(2) (pp. 423–442).
203. Perkmann, M.; Walsh, G. (2007). University-industry relationships and open innovation: Towards a research agenda. *International Journal of Management Reviews*, 9(4) (pp. 259–280).
204. Peters, T.J.; Waterman, R.H. (1982), *In Search of Excellence – Lessons from America's Best-Run Companies*. London: Harper Collins Publishers.
205. Phan, P.H.; Siegel, D.S.; Wright, M. (2005). Science parks and incubators: observations, synthesis and future research. *Journal of Business Venturing,* 20 (pp. 165–182).
206. Phillips, J. (2010). *Relentless Innovation: What Works, What Doesn't and What That Means For Your Business*. Boston: The McGraw-Hill Companies.
207. Phillips, R. (2003). *Stakeholder Theory and Organizational Ethics.* San Francisco: Berret-Koehler Publishers, Inc.
208. Philpott, K.; Dooley, L.; O'Reilly, C.; Lupton, G. (2011). The entrepreneurial university: examining the underlying academic tensions. *International Journal of Technological Innovation and Entrepreneurship*, 31 (pp. 161–170).
209. Pollitt, Ch.; Bouckaert, G. (2003). *Viešojo valdymo reforma, Lyginamoji analizė* (pp. 177–201). Vilnius: Algarvė. Iš anglų kalbos vertė Musteikytė, J.; Grikienis, R.
210. Pollitt, Ch., (1990). *Managerialism and the Public Services: the Anglo-American Experience*. Massachusetts: Basil Blackwell.
211. Price, I. (2004). Complexity, complicatedness and complexity: a new science behind organizacional intervention. *Emrgence: Complexitry&Organisations, Special Double Issue,* 6(1-2) (pp. 40–48).
212. Probst, G. (1997). *Organizational Learning*. New Jersey: Prentice Hall.
213. Probst, G.; Raub, S.; Romhardt, K. et al. (2006). *Wissen Managen* (Managing Knowledge). Genf: Universitaat Genf.
214. Provan, K. G.; Kenis, P. (2007). Modes of network governance: structure, management, and effectiveness. *Journal of Public Administration Research and Theory,* 18 (pp. 229–252).
215. *Public-Private Partnerships. In Pursuit of Risk Sharing and Value for Money.* (2008). France: OECD Publications. [Accessed November 14, 2015]. Access: http://www.keepeek.com/Digital-Asset-Management/oecd/governance/public-private-partnerships_9789264046733-en.
216. Public Private Partnership in Research (2014). [Accessed on August 24, 2014]. Access: http://ec.europa.eu/research/industrial_technologies/ppp-in-research_en.html.
217. Puškorius, S. (2007). Užsienio šalių universitetų valdymo modelių gairės. *Viešoji politika ir administravimas, 22.*

218. Puškorius, S. (2006). Šiuolaikinės tarporganizacinės sąveikos formos viešajame sektoriuje: mokslo darbai. Vilnius: Mykolo Romerio universiteto leidyba.
219. Raipa, A. (red.). (2012). *Modernus viešasis valdymas: kolektyvine monografija.* Kaunas: Vitae Litera.
220. Raipa, A. (red.). (2001). *Viešojo administravimo efektyvumas: monografija*. Kaunas: Technologija.
221. Raipa, A. (red.). (2007). *Viešasis administravima: monografija*. Kaunas: Technologija.
222. Raipa, A.; Giedraitytė V. (2012). Rizikos valdymas viešojo sektoriaus inovaciniuose procesuose. Viešoji politika ir administravimas, 11(4) (pp. 607-618).
223. Raipa A.; Jurkšienė L. (2013). Inovacijų vieta viešojo valdymo modernizavimo struktūroje: teorinis aspektas. Viešoji politika ir administravimas, 12(2) (pp. 226-235).
224. Raipa A. (2013). Organizacijų pasirengimo pokyčių valdymui dekompozicija. Viešoji politika ir administravimas, 12(4) (pp. 523-539).
225. Raišienė, A.G. (ats. red.), et al. (2014). *Veiksmingos vadybos gairės: teorinės įžvalgos ir Lietuvos organizacijų atvejai:* mokslo studija. Vilnius: Mykolo Romerio universiteto leidyba.
226. Reay, T.; Hinings, C.R. (2009). Managing the rivalry of competing institutional logics. *Organization Studies,* 30(6) (pp. 629-652).
227. Renault, C. (2006). Academic capitalism and university incentives for faculty entrepreneurship. *The Journal of Technology Transfer,* 31 (pp. 227–239).
228. Rhodes, F.H.T. (1997). *Successful Fundraising for Higher Education: the Advancement of Learning*. Maryland: Rowman & Littlefield Education.
229. Rogers, E. M. (2003). *Diffusion of Innovations*. New York: Free Press.
230. Rogers, E.M.; Takegami, S.; Yin, J. (2001). Lessons learned about technology transfer. *Technovation,* 21, (pp. 253–261).
231. Rothaermel, F.T.; Agung, S.; Jiang, L. (2007). University entrepreneurship: a taxonomy of the literature. *Industrial and Corporate Change,* 16 (pp. 691–791).
232. Santoro, M.; Chakrabarti, A. (2002). Firm size and technology centrality in industry–university interactions. *Research Policy*, 31(7) (pp. 1163–1180).
233. Santoro, M.; Saparito, P. (2003). The firm's trust in its university partner as a key mediator in advancing knowledge and new technologies. *IEEE Transactions on Engineering Management,* 50(3) (pp. 362–373).
234. Scott, W.R. (2004). Institutional theory. *Encyclopedia of Social Theory.* San Francisco: Sage.
235. Scott, W.R. (2004). Reflections on a half-century of organizational sociology. *Annual Review of Sociology*, (30) (pp. 1–21).
236. Schartinger, D.; Schibany, A.; Gassler, H. (2001). Interactive relations between university and firms: empirical evidence for Austria. *Journal of Technology Transfer,* 26 (pp. 255–268).
237. Schartinger, D.; Rammer, C.; Fischer, M.M.; Fröhlich, J. (2002). Knowledge interactions between universities and industry in Austria: sectoral patterns and determinants. *Research Policy* 31(3) (pp. 303–328).
238. Sherif, K. (2006). An adaptive strategy for managing knowledge in organisations. *Journal of Knowledge Management*, 10 (4) (pp. 72–80).

239. Siegel, D.; Zervos, V. (2002). Strategic research partnership and economic performance: empirical issues. *Science and Public Policy,* 29 (5) (pp. 331–343).
240. Siegel, D.; Waldman, D.; Link, A. (2003a). Assessing the impact of organizational practices on the relative productivity of university technology transfer offices: an exploratory study. *Research Policy,* 32(1) (pp. 27–48).
241. Siegel, D. et al. (2003). Commercial knowledge transfers from universities to firms: improving the effectiveness of university–industry collaboration. *Journal of High Technology Management Research*, 14(1) (pp. 111–33).
242. Siegel, D. et al. (2004). Toward a model of effective transfer of scientific knowledge from academicians to practitioners: a qualitative evidence from the commercialisation of university technology. *Journal of Engineering and Technology Management,* 21(1–2) (pp. 115–142).
243. Skaržauskienė, A. (2010). *Sisteminis mąstymas organizacijų valdyme: monografija*. Vilnius: Mykolo Romerio universiteto leidyba.
244. Smillor, R.; O'Donnell, N.; Stein, G.; Wellborn, R.S. (2007). The research university and the development of high-technology centers in the United States. *Economic Development Quaterly,* 21 (3) (pp. 203–222).
245. Sorensen, E.; Torfing, J. (2007). *Theories of Democratic Network Governance*. New York: Palgrave Macmillan.
246. South, A.J.; Levitt R.E.; Dewulf, G.P. (2015). Dynamic Stakeholder Networks and the Governance of PPPs. *Proceedings of the 2nd International Conference on Public-Private Partnerships*. U.S.A. (pp. 26–29).
247. Stringer, E.T. Action Research, 4th Edition. London: Sage Publications, 2014.
248. *Study on University-Business Cooperation in the US. Final report.* (2013). London: LSE Enterprise.
249. Sudnickas, T. (2008). Šiuolaikinės veiklos matavimo sistemos. Integravimo su kokybės valdymo ir procesų tobulinimo sistemomis galimybės // Viešoji politika ir administravimas. Vilnius: Mykolo Romerio universiteto Leidybos centras, Nr. 26, p. 17–24.
250. Tauginienė, L. *Social Responsibility in the Management of University Research Performance.* (dissertion). Vilnius: Mykolo Romerio universiteto leidyba, 2013. 180 p.
251. Teece, David J. (2010). Business models, business strategy and innovation. *Long Range Planing,* 43 (pp. 185–190).
252. Tether, B. S. (2005). Do services innovate (differently)? Insights from the European barometer survey. *Industry and Innovation*, 12(2) (pp. 153–184).
253. Thorp, H.; Goldstein, B. (2010). *Engines of Innovation: The Entrepreneurial University in the Twenty-First Century.* North Carolina: University of North Carolina Press.
254. Thursby, J.; Fuller, A.; Thursby, M. (2007). US faculty patenting: inside and outside the university. *NBER Working Paper No. 13256*.
255. Thursby, J.; Kemp, S. (2002). Growth and productive efficiency of university intellectual property licensing. *Research Policy*, 31 (pp. 109–124).
256. Vasiljevienė, N.; Tyagi, R.K. (2013). The case of CSR and irresponsible management practices // Competitiveness review. Bingley: Emerald Group Publishing Limited. 23 (4/5), (pp. 372–383).

257. Vasiljevienė, N. (2014). Development of pro-eco activities: possible malfunctions and searching integrity for responsible business performance // Kaunas: Vilniaus universiteto leidykla. 13(1), (pp. 175–195).

258. Trueman, S.; Borrell-Damian, L.; Smith, J.H. (2014). *The Evolution of University-based Knowledge Transfer Structures.* Paris: EUA Publications.

259. Tschirky H.; Trauffler G. (2011). *Managing Innovation Driven Companies: Approaches in Practice.* London: Palgrave Macmillan.

260. Vaišvila, A. (2004). *Teisės teorija.* Vilnius: Justitia.

261. Van Rijnsoever, F.J.; Hessels, L.K.; Vandeberg, R.L.J. (2008). A resource-based view on the interactions of university researchers. *Research Policy,* 37(8) (pp. 1255–1266).

262. Viliūnas, G. (2006). Naujoji žinių paradigma ir mokslo valdymo sistemos pokyčiai. *Informacijos mokslai,* 9 (p. 37).

263. White, M.; Bruton, G. (2007). *The Management of Technology and Innovation: A Strategic Approach*. Toronto: Thomson-South-Western, 2007.

264. Worth, M.J. (2002). *New Strategies for Educational Fundraising*. Maryland: Rowman & Littlefield Publishers.

265. Wright, M.; Clarysse, B.; Lockett, A.; Knockaert, M. (2008). Mid-range universities' linkages with industry: Knowledge types and the role of intermediaries. *Research Policy*, 37(8) (pp. 1205–1223).

266. Zakarevičius, P. (2003). *Pokyčiai organizacijose: priežastys, valdymas, pasekmės. Monografija.* Kaunas: Vytauto Didžiojo universiteto leidykla: 2003.

267. Zakarevičius, P.; Kvedaravičius, J.; Augustauskas, J. (2004). *Organizacijų vystymosi paradigma.* Kaunas: Vytauto Didžiojo universiteto leidykla.

268. Zeng, S.X.; Xie, X.M.; Tam, C.M. (2010). Relationship between cooperation networks and innovation performance of SMEs. *Technovation,* 30(3) (pp. 181–194).

Legislation:

269. Resolution of Seimas of the Republic of Lithuania. Long-term Development Strategy of the State. 12 November 2002, No. IX-1187. Access via internet:<http://www.mita.lt/uploads/documents/innovation_en/strategy_20102020.pdf> on July 10, 2015.

270. Resolution of the Government of the Republic of Lithuania. Lithuanian Innovation Strategy for the Year 2010-2020. February 17, 2010. No. 163. Vilnius. Access via internet: <http://www.mita.lt/uploads/documents/innovation_en/strategy_20102020.pdf>July 12, 2015.

271. Resolution of the Government of the Republic of Lithuania. The Lithuanian Innovation Development Programme 2014–2020. December 18, 2013. No. 1281. Access via internet: <http://www.mita.lt/uploads/documents/lithuanian_innovation_programme.pdf>, July 12, 2015.

272. Lithuanian Innovation Strategy for the Year 2010-2020: Access via internet <http://www.mita.lt/uploads/documents/innovation_en/strategy_20102020.pdf>July 5, 2015.

273. The Lithuanian Innovation Development Programme for 2014-2020. Access via internet: <http://www.ukmin.lt/uploads/documents/Lietuvos%20inovacij%C5%B3%20pl%C4%97tros%20programmea_patvirtinta%202013>, July 17, 2015.

274. The National Progress Strategy Lithuania 2030. Access via internet: <https://lrv.lt/uploads/main/documents/files/EN_version/Useful_information/lithuania2030.pdf>July 17, 2015.

275. Law on Higher Education and Research of the Republic of Lithuania. 30 April 2009 No XI-242. Vilnius. (last amended on 5 June 2014 – No XII-924). Accessed via internet <*http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=478933*>July 20, 2015.

Internet sources:

276. 30 Good Practice Case Studies in University and Business Cooperation. Science-to-Business Marketing Research Centre. Accessed via internet <http://www.ub-cooperation.eu/pdf/casestudyreport.pdf> on August 22, 2014.
277. Aleksandras Stulginskis University. Accessed via internet <http://www.asu.lt/pradzia/en/> November 10, 2015.
278. Barriers and Drivers in European University-Business Cooperation 2011. Accessed via internet <http://ub-cooperation.eu/pdf/driversbarriers.pdf> August 20, 2013.
279. E-Research Gate portal. Accessed via internet <*https://www.e-mokslovartai.lt/knowledge-intensive-products*>, on October 15, 2015.
280. Innovation Union Scoreboard 2015. Accessed via internet <http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards/files/ius-2015_en.pdf>, April 4, 2015.
281. Global Competitiveness Report 2013-2014. Accessed via internet <http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2013-14.pdf> April 4, 2015.
282. Global Competitiveness Report 2014-2015: Accessed via internet <http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf>, April 4, 2015.
283. Kaunas Technological University. Accessed via internet <http://ktu.edu/en/business>, accessed November 4, 2015.
284. Klaipėda University. Accessed via internet <http://www.ku.lt/en/about/vision-and-mission/>, November 10, 2015.
285. Lithuanian Academy of Music and Theatre. Accessed via internet <http://lmta.lt/index.php?id=5232>, May 14, 2014.
286. Lithuanian Academy of Science. Accessed via internet <http://lma.lt/en/about-lac/general-information/about-las-in-brief>, September 12, 2015.
287. Lithuanian Innovation Centre. Accessed via internet <http://www.lic.lt/index.php?51062 3179>, July 3, 2015.
288. Lithuanian Sports University. Accessed via internet <http://www.lsu.lt/en/about-university>, November 10, 2015.
289. Lithuanian University of Education. Accessed via internet <http://www.leu.lt/en/about_university/mission-and-vision.html>, November 11, 2015.
290. Lithuanian University of Medical Science: Accessed via internet <http://lsmuni.lt/en/about-university/mission-and-objectives>, November 11, 2015.
291. Mykolas Romeris University. Accessed via internet <https://www.mruni.eu/en/>December 5, 2015.
292. Networks of Centres of Excellence of Canada. Accessed via internet <www.nce-rce.gc.ca>August 21, 2015.
293. Platform on Research and Innovation Policies and Systems ERAWATCH: Accessed via internet <http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country _pages/>, August 10, 2014.
294. Project University and Business Cooperation through Success Stories. Accessed via inter-

net <http://www.dynamicuniversity.eu/jaunumi/dynamic-university-supports-the-project-universitybusiness-cooperation-through-success-stories/57/>, October 15, 2015.

295. Research and Higher Education Analysis and Monitoring Centre (MOSTA). Accessed via internet <http://www.mosta.lt/en/>, November 12, 2015.
296. Science, Innovation and Technology Agency (MITA) official website. Accessed via internet <http://www.mita.lt/en/>September 20, 2015.
297. Stanford University (2014). The triplex Helix Concept. Accessed via internet <http://triplehelix.stanford.edu/3helix_concept> August 28, 2014.
298. Start-up America Partnership. Accessed via internet <http://www.go.co/about/>August 20, 2015.
299. Šiauliai University. Accessed via internet <http://su.lt/bylos/RsV/Dokumentai/siauliu%20universiteto%20statutas_2013-12-10.pdf> November 10, 2015.
300. The Canadian Council for Small Business and Entrepreneurship. Accessed via internet <http://www.deans-council.com/>August 20, 2014.
301. The European Cluster Memorandum. Accessed via internet <http://www.vinnova.se/upload/dokument/VINNOVA_gemensam/Kalender/2008/Klusterkonferens_jan08/European%20Cluster%20Memorandum%20Final.pdf>, on July 7th, 2015.
302. The General Jonas Žemaitis Military Academy of Lithuania. Accessed via internet<http://www.lka.lt/en/about-us/aim-of-the-academy.html>November 10, 2015.
303. The Government-University-Industry Research Roundtable (GUIRR) website. Accessed via internet<http://sites.nationalacademies.org/PGA/guirr/PGA_044322.htmhttp://sites.nationalacademies.org/PGA/guirr/PGA_044322.htm>August 20, 2014.
304. The Ministry of the Economy of the Republic of Lithuania. Accessed via internet <http://www.ukmin.lt/web/lt/innovations/innovation_policy> on November 14, 2015.
305. The Ministry of Education and Science. Accessed via internet <http://www.smm.lt/en/>November 23, 2015.
306. The National Business Incubation Association: Accessed via internet <http://www.go.co/about/> August 20, 2015.
307. The National Science and Engineering Council (NSERC) (Canada). Accessed via internet <http://www.nserc-crsng.gc.ca/NSERC-CRSNG/Index_eng.asp> August 20, 2014.
308. The Research Council of Lithuania. Accessed via internet <http://www.lmt.lt/en/news.html>December 5, 2015.
309. The Social Sciences and Humanities Research Council(Canada). Accessed via internet <http://www.sshrc-crsh.gc.ca/home-accueil-eng.aspx>August 20, 2014.
310. The State of University-Business Cooperation 2013. Accessed via internet <http://www.ub-cooperation.eu/>January 15, 2015.
311. Universities and Innovation: the Challenge for Europe. (2006*)*. League of European Research Universities. Accessed via internet <http://www.leru.org/files/general/Universities%20and%20Innovation%20The%20Challenge%20for%20Europe%20.pdf> May 4, 2015.
312. Vilnius Gediminas Technical University. Accessed via internet <http://www.vgtu.lt/index.php?lang=2>, November 10, 2015.
313. Vilnius University. Accessed via internet <http://www.vu.lt/en> November 10, 2015.
314. Vytautas Magnus University. Accessed via internet http://www.vdu.lt/wp-content/uploads/2010/06/369.pdf> November 10, 2015.

ANNEXES

Annex 1. Major in-depth, semi-structured interview questions

No.	Questions
1.	Would you please comment on university and business cooperation phenomenon in Lithuania? Do universities and business companies cooperate? Is UBC included in long-term strategies, is it communicated throughout all management levels?
2.	Would you please comment on the major forms UBC? Do they create start-ups, spin-offs? Do they commercialise R&D? If yes, would you please share the best practice?
3.	Would you please comment on the process of participating in UBC. Where does /should initiative start? How to enhance the UBC process? Is it based on interpersonal relations? What are the major necessary competences and psychological, communicational elements?
4.	Would you please comment on the ultimate objectives and processes of business and university and UBC? Do people from university and business understand the business or higher education objectives? Do they speak "the same language"? Please comment.
5.	Do you think Lithuanians have specific features that determine the current UBC situation? Please comment.
6.	What the major barriers, drivers and success factors of UBC? What is the role of leadership on the national and organisational level? Please comment.
7.	What systems would you suggest to enhance UBC from strategic and operational management levels on the organizational and national level? Would you please comment on engagement in UBC on the strategic and operational level?
8.	What employee motivational systems would you implement to enhance UBC?
9.	What management mechanisms would you introduce to enhance UBC from university, business and public governance positions?
10.	How would you evaluate the situation of UBC from time perspective? Would you please comment on UBC situation ten years ago. What are your prognoses for future 10 years? What is the mission of education in building UBC?

Annex 2. Expert attitude distribution scoreboard

Code	Type						
	Lack of long-term strategic thinking and its communication throughout all management levels	**Need for leadership and consolidator on the national level**	**Necessity of engaging in UBC on the operational governance level**	**Need to re-focus on the ultimate objective and not the process**	**Universities and business speak "different languages": the need for interpreters**	**UBC is based on interpersonal interaction: the role of basic competences, trust and mutual understanding**	**The mission of education: building the entrepreneurial and cooperative culture**
U001	X			X	X	X	X
U002	X	X	X	X		X	
U003		X			X		X
U004			X			X	X
U005		X					
U006	X						X
B001	X	X		X	X		
B002			X	X		X	X
B003	X		X		X	X	
B004		X					
B005							X
B006					X		
B007		X	X				
P001	X			X	X	X	
P002						X	X
J001		X	X				
J002	X		X	X		X	
J003	X		X		X		X
J004		X			X		
J005	X	X					X

Annex 3. UBC representation in university mission and vision statements

University	Mission / vision statement
Mykolas Romeris University	*Mission statement:* MRU mission is to educate society, to accumulate and cherish intellectual potential, to educate leaders capable of creating and introducing innovations that determine diverse scientific, cultural and technological progress. MRU aims at educating a personality which is mature, entrepreneurial, an independent leader of the future, and a citizen fostering Lithuanian identity. *Source*: https://www.mruni.eu/mru_lt_dokumentai/centrai/akademiniu_ reikalu_ centras/studiju_kokybe/savianalize_2014/mru_self_evaluation_ report _full_version.pdf (Accessed on 2014 05 09 and 2015 11 10)
Vytautas Magnus University	*Mission statement:* Vytautas Magnus University is a community-oriented institution of science, art and studies which continues the mission of the University of Lithuania established in 1922, creates conditions for liberal education, develops partnership, actively participates in the life of Kaunas, creates the future of Lithuania and contributes to the development of the world culture and science. 9. The University shall exercise the following rights: 13) to establish the forms of cooperation with Lithuanian and foreign enterprises, establishments, organisations, funds, and individuals; *Source*: http://www.vdu.lt/wp-content/uploads/2010/06/369.pdf, p. 2 (accessed on 2014 05 09 and 2015 11 10)
Vilnius University	*Mission statement:* to create, accumulate and disseminate knowledge by ensuring continuity of authentic university culture distinguished by the atmosphere where old traditions and new ideas enrich each other. Freedom of thought and diversity of opinions are the main values of the University community. A unity of research and studies is the core principle of the overall activity of the University. The University should distinguish itself by a broad spectrum of fundamental and applied research. It should seek to assume the leading position among other Lithuanian institutions in all research areas that are essential to the very nature of a comprehensive University and set itself the goal of international excellence in the interdisciplinary research. The University should be committed to the mission of opening the doors and providing universal education for the most talented young people from all districts of Lithuania and educating active and responsible specialists, who demonstrate the need to expand their knowledge and improve professionally and who are able to learn throughout their lifetime. The University should seek that the quality of all forms of studies conforms to the modern culture and technologies and pertains to the needs of the state and society. *Vision statement:* To position and distinguish itself in European research and education area by top level research, which should be sustained by University's research teams of international acclaim and new teams, as well as to ensure annually increasing involvement in European research and educational programmes; to ensure that the balanced development and interaction of research in humanities, social, physical, biomedical and technological sciences remains the

	most outstanding feature of the University, which essentially differentiates it from other Lithuanian establishments of higher education and research; to initiate and actively implement the projects of value for the economic development of the country, which would encourage effective co-operation of scientific and educational institutions with high technology companies and create favourable conditions and environment for innovations and entrepreneurship; to create a well-functioning quality assurance system which would guarantee effective monitoring of the existing study programmes and development of new programmes and which would encourage the implementation of advanced teaching methods and tools. The system should ensure that generic and specific competencies and skills of University graduates are in consistency with the needs and tendencies in the economy, culture and labour market of the country; to significantly expand non-consecutive, distance and other flexible study forms and methods and become the centre of continuous professional improvement and lifelong learning, which plays an important role in transition of the country toward knowledge-based society. *Source*: http://www.vu.lt/lt/apiemus/misija-ir-vizija (accessed on 2014 05 09; and 2015 11 10)
Kaunas Technological University	Mission statement: to provide research based studies of international level; create and disseminate knowledge and innovative technologies for sustainable development of the state and innovation development; develop open and inspiring environment for talents and leadership. Vision statement: leading European university the activities of which are based on knowledge and technology creation and transfer. *Source*: http://ktu.edu/turinys/universiteto-misija-ir-vizija (accessed 2014 05 09 and 2015 11 10)
Klaipėda University	*Mission statement:* Klaipėda University is a centre of Lithuania as a marine country and a centre of the Baltic Sea region research, arts and studies, which prepares highly qualified specialists, fosters humanist values and pays parallel priority attention to: Research in marine science and marine studies; History, culture and languages, education, health and social welfare, economy, politics, communications and arts of the Baltic Sea region; Sustainable development of Western Lithuania and the Klaipėda City; Development of an integrated science, studies and business centre. *Vision statement:* Klaipėda University is the Western Lithuania university, which is both multidisciplinary and interdisciplinary as well as integrated into international academic networks, a leader of the national and Baltic Sea region research and studies, an upholder of cultural heritage, a life-long learning centre. *Source*: http://www.ku.lt/en/about/vision-and-mission/ (accessed on 2014 05 14 and 2015 11 10)
Šiauliai University	*Mission statement*: to encourage cultural, social and economic progress of the society, change of the culture, social environment and economics of the state and especially of its Northern region; develop research and art of high quality and added value in priority areas of sustainable national development; to contribute to the integration of free creative research thinking and Lithuanian

	science and study into the European and global academic area; to prepare specialists able to compete in labour and research market, versatile humanistic civic personalities, competitive community, able to integrate into region, Lithuanian, European and global market. *Source*: http://su.lt/bylos/RsV/Dokumentai/siauliu%20universiteto%20statutas_2013-12-10.pdf (accessed on 2014 05 14 and 2015 11 10)
Vilnius Gediminas Technical University	*Mission statement:* The university's mission is to develop a publicly responsible, creative, competitive individual who is receptive to science, the latest technologies and cultural values; to promote scientific progress, social and economic well-being; to create value that ensures the development of both Lithuania and the region in the global context. The university's vision is to be a prestigious Lithuanian institution of higher education, the scientific and studies level of which conform to the best European technical universities' level. The university is attractive for both Lithuanian and foreign scientists and students, is able to respond to the environmental challenges and has a great social importance to the national progress. *The university's objectives are as follows:* To prepare qualified, creative and socially active professionals, who are able to work successfully in both Lithuanian and foreign scientific and labour markets; To carry out international-level research concentrating scientific activities at the departments with the highest level of competence; to implement the recruitment of established scientists policy; To develop research-based innovations for society and business; to become a leader of the Baltic universities in the scientific areas of sustainable construction, transport, sustainable environment, information technologies and communication; To promote the sustainable development of the country and region; to develop the innovative society. *Source:* http://www.vgtu.lt/en/about-vgtu/mission-vision-objectives/ (accessed on 2014 05 14 and 2015 11 10)
Aleksandras Stulginskis University	*Mission statement:* We, ASU community, are creating and disseminating scientific knowledge, sincerely striving for safe and healthy food and full-fledged living environment for every citizen of Lithuania. *Our steps to this major aim include:* Training of leaders and development of their ability to create and share their knowledge, precipitance and desire for continuous improvement; Creation and dissemination of biological, engineering and social technologies, advanced knowledge and experience in sustainable use and development of land, forest and water resources; Fostering of achievements and long-standing traditions of University activity, building our work on the most important professional and universal values. *Vision statement:* University is open to challenges and changes, adopts the best experience of the world class universities, develops internationality, serves own country, seeks continuous improvement andleadership among the universities of the same area. *Source*: http://www.asu.lt/pradzia/en/ (accessed 2014 05 14 and 2015 11 10)

Lithuanian University of Education	*Mission statement*: Society's education, which is based on modern education philosophy and the newest scientific knowledge. The University is striving to solidify its exceptional place in Lithuanian and European Union higher education field as a University of Educational nature in the areas of studies, research and practice. *Vision statement*: The most important educational university, gradually solidifying this status in Central and Eastern regions of the European Union; Institution that is able to change and adapt, is international, modern, attractive and competitive; successfully trains specialists of wide spectrum, develops fundamental and applied scientific research, applies the results in practice and provides various social educational services. University is continually developing the specialised education model and is constantly renewing the study process and organization of scientific research; the University will strive to keep the training of pedagogues and education specialists a priority; It will extend the variety of services offered to students and community groups of different areas. *Source*: http://www.leu.lt/en/about_university/mission-and-vision.html (accessed on 2014 05 14 and 2015 11 10)
Lithuanian Academy of Music and Theatre	*Mission statement:* The Lithuanian Academy of Music and Theatre is an arts university that specialises in music, theatre, film and dance with the mission to ensure a sustainable development of arts and artistic research, participate in shaping the policy of the national art education and culture, foster the spiritual harmony and the national identity, and educate the most artistically gifted young people into creative, initiative, entrepreneurial members of the society who would be open to Lithuania and the entire world. *Source*: http://lmta.lt/index.php?id=5232 (accessed on 2014 05 14)
Lithuanian University of Health Sciences	*Mission statement:* to create, accumulate, systematise and spread scientific knowledge and the newest achievements of studies and science, teach and develop a creative, honest, initiative-showing, educated, independent and enterprising personality, foster democracy and welfare, develop a healthy and educated society and, through this activity, stimulate economic and cultural prosperity of the country, competitiveness of economic activity and social unity, despite gender, race, political and religious beliefs, nationality and citizenship of the employees, students and auditors. *Objectives of the University:* To conduct studies providing higher university education and qualification of higher education corresponding to the contemporary level of knowledge and technologies based on scientific research and to develop a comprehensively educated, ethically responsible, creative and enterprising personality; To conduct sustainable development of scientific knowledge in different areas, high-quality scientific research and experimental (social and cultural) development, prepare scientists, participate in various practical activities and cooperate with national and foreign partners in the scientific and other areas; To promote development of the regions and the entire country through cooperation with public and economic partners and through scientific, educational, artistic and other cultural activity;

	To train the society which is open to education, science, art and culture and able to use science effectively and compete in the market of high-level technologies, products and services. *Source:* http://lsmuni.lt/en/about-university/mission-and-objectives/ (Accessed on 2014 05 10 and 2015 11 10)
Lithuanian Sports University	*Mission statement:* Promote coherent progress of the society, and be useful to it providing exclusive international level research and studies in sports science. *Vision statement:* To become one of the leading universities of sports, physical education, rehabilitation (physiotherapy) and health sciences in Europe, and the best in this area in the Baltic Sea Region. By the year 2017, the LSU's uniqueness in sport, physiotherapy and health promotion, and appropriate application of sports science in studies and innovations will have ensured our position of a leading sports, physiotherapy and health science university in the Baltic Sea Region. *Source*: http://www.lsu.lt/en/about-university (accessed on 2014 05 20 and 2015 11 10)
The General Jonas Žemaitis Military Academy of Lithuania	*Aim of the Academy* – to train commanders-leaders for the Lithuanian Armed Forces by cherishing their traditions, providing high-quality university education, military education and performing scientific researches. *Source:* http://www.lka.lt/en/about-us/aim-of-the-academy.html (accessed on 2014 05 20 and 2015 11 10)

MYKOLAS ROMERIS UNIVERSITY

Nomeda Gudelienė

UNIVERSITY AND BUSINESS COOPERATION GOVERNANCE IN LITHUANIA

Summary of Doctoral Dissertation
Social Sciences, Management (03 S)

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The doctoral dissertation is available at Martynas Mažvydas National Library of Lithuania (Gedimino ave. 51, Vilnius) and Mykolas Romeris University library (Ateities str. 20, Vilnius).

Nomeda Gudelienė

UNIVERSITY AND BUSINESS COOPERATION GOVERNANCE IN LITHUANIA

Summary

Thematic relevance and novelty. The generation of new knowledge and its transfer to innovative and market-attractive products and/or services is the driving force of a knowledge-based society and the major determinant of a country's competitive position in the global market. The technologically advanced modern world prompts transformations: new ways of knowledge generation, transfer and application are emerging, market limitations are decreasing, universities, business and government institutions are fast learning to cooperate in networks of value creation. Numerous legal, economic, managerial, cultural, psychological, and other factors speeding up innovation process have been discovered and investigated. Although researchers agree that transfer of new knowledge from the lab of researcher to the workplace of a practitioner is the main way to accelerate the progress of society (Phillips, 2010), the concept of university and business cooperation (UBC) governance from university, business and government perspectives is becoming the major challenge globally.

Furthermore, universities, business companies and government institutions globally have undergone significant transformations during the last two decades. For centuries university mission was twofold – teaching and research. Entrepreneurship, providing commercially-based service to society and cooperation with business was not even a matter of academic and public discourse. Nowadays universities find themselves struggling between Conventional or Mode 1 and Corporative or Mode 2 approaches behind their mission that were influenced by the expansion of the New Public Management (NPM) and the New Public Governance (NPG) doctrines. Corporative or Mode 2 approach characterized by entrepreneurship, service to society, research orientation to overcome societal and technological challenges is becoming more widespread. Therefore, universities face the need to have close and functioning relations with private and public sectors (Etzkowitz and Leydesdorff, 2000).

Business environment has also changed dramatically during the last couple of decades. Globalisation, advancement of information and communication technologies and the increased level of education has decreased market limitations, prompted e-business and internet of things, facilitated better access to financial and human resources. To remain competitive and satisfy better market demand business companies have to innovate, develop research-based products and services, access to knowledge bases and talents.

Public governance has also experienced transformations during the last couple of decades. The emergence of e-government, the evolution of NPM and NPG, participation in international networks and alliances has changed the geography of national public governance systems globally. For example, the creation of the European Union's ten-year growth and jobs strategy Europe 2020 conditions a need to overcome societal challenges of education and employment, research and development, climate and energy, social inclusion and poverty reduction for a smart, sustainable and inclusive growth. It can be

achieved by enhancing knowledge economy that is built on close and functioning relations between universities, private sector and government. Thus, the discussions on university-business-government cooperation are no longer about whether it is necessary but rather how to cooperate best for the benefit of all stakeholders.

Lithuania has a specific context of UBC. The Restoration of Independence in the 1990s has changed university, business and government systems and the landscape for innovation. Together with other Eastern and Central European countries, Lithuania has experienced transformations from socialist to market economies. Although market mentality was finding root in Lithuanian society, enhancement of UBC was not the focus of societal and academic discourse. Public universities continued to be state-owned, mostly financed from the national budget, business companies operated in their own realm and UBC was not a public policy focus. The situation changed during the last decade due to the evolution of the NPM and NPG and the shift from Conventional or Mode 1 o Corporative or Mode 2 approach to public university governance. The basic funding for public universities started to decrease, they had to turn and adapt to competitive funding sources, UBC enhancing national schemes such as valleys, science and technology parks, and clusters with investment from the national budget and structural funds for the period of 2007–2013 were introduced, UBC has appeared at the centre of public discourse. In addition, the incentives from the European Commission, best practice and examples from Western Europe and the Northern America aimed at building closer knowledge triangle between university, industry and government has speeded up UBC processes in Lithuania. The development of innovation processes in Lithuania are revealed in international rankings. For example, the data of the Global Competitiveness Report carried out by World Economic Forum ranked Lithuania 48th out of 148 countries in 2013–2014 (Global Competitiveness Report, 2013–2014) and the country moved upward to the 41st position in 2014–2015 (Global Competitiveness Report, 2014–2015). According to the indicator 'university and industry collaboration in R&D' Lithuania ranked 28th position globally in 2014–2015 (Global Competitiveness Report, 2014–2015). UBC governance from university, business and government perspectives is another step to be taken.

The dissertational research emerged out of my personal search for research-based solutions to daily practice challenges and initial one year observation that UBC ecosystem is not functioning efficiently in Lithuania due to the lack of managerial approach. The dissertation raises questions and analyses the shift in human mindset and behaviour during the period of Lithuanian Independence, carries out comparative case study and scholarly debate on a variety of schools of thought, approaches and paradigms, examines the experience and practice of foreign countries aiming to provide research-based solutions for UBC governance in Lithuania.

Research problem. The spread of neoliberal ideas and their implementation mechanisms at the end of 20th century has changed the landscape of public policy and governance in Lithuania. Different aspects of public policy, governance and public service delivery have been examined by numerous foreign and Lithuanian researchers. Although there is a variety of research results evaluating the shifting approach to public service delivery, the research on services provided by public universities, their cooperation with stakeholders in the networks of value creation, knowledge and/technology transfer is

fragmented and inconsistent. A few research has been carried out on the content of public service delivered by universities, their quality, support structures, financing mechanisms and return on investment. Some questions still remain unanswered. How and why public university governance has changed during the last decades? What are the dominating paradigms and approaches behind modern public university governance? What is the experience and best practice of foreign countries in managing public university cooperation with their stakeholders, including business companies? What public policy, governance and business management measures can be applied to enhance UBC in Lithuania? What conceptual normative governance models can stipulate UBC practice in Lithuania and bring optimal benefit to all stakeholders?

The research framework was constructed with regard to the evolution and enactment of NPM and NPG, the shift from Conventional or Mode 1 to Corporative or Mode 2 approach to public university governance, the development of knowledge management models from the Triple Helix through the Quadruple Helix to the Quintuple Helix, knowledge and innovation management and network management perspectives. The theoretical foundation was designed by integrating Systems theory, Institutional theory and Stakeholder theory. UBC phenomenon in Lithuania was examined from holistic, integral, dynamic, systemic and processual approach. The major research problem raised in this dissertation is how management theory can enhance UBC practice in Lithuania under shifting approaches to university, business and public governance.

Previous research. As public university and UBC governance can be traced to the evolution of NPM and NPG, it is noteworthy to mention the most outstanding theoreticians in the field. The works of Ch. Hood, Ch. Pollitt, G. Bouckaert, T. Bovaird, E. Lofter, B.G. Peters, T. Gaebler, D. Osborne, D. McNabb make the foundation of NPM and NPG research. It is an evolving process that constantly transforms the content and form of NPM and NPG, eliminates its dysfunctions, deconstructs it and adapts to the current needs and expectations of the society. Public policy and governance, and, consequently, public university and UBC governance constantly appears under competing forces and ideological movements. The transformations of public policy aimed to increase the creation of public value include strategic management, programme and project based fund allocation, inter-sectorial partnership, stakeholder and citizen involvement, etc. Different elements of evolving public governance including NPM and NPG approaches have been explored in the works of Lithuanian researchers A. Raipa, A. Kaziliūnas, S. Puškorius, A. Guogis, D. Gudelis, B. Melnikas, V. Nakrošis, V. Domarkas, V. Smalskys, I. Mačerinskienė, etc. They have examined the public governance system and processes, identified the major factors that had an impact on the volume and efficiency of reforms.

The phenomenon of public university governance as public service provider and its cooperation with stakeholders, including business companies is rather new and has not received much research interest in Lithuania while the phenomenon, its dynamics, elements, participants, impact on regional and national socio-economic processes is widely covered by research abroad. The major globally recognised research groups carrying out research on UBC are affiliated with Stanford University Triple Helix Research Group (USA), Massachusetts Institute of Technology (USA), Silicon Flatirons at Colorado University (USA), University of British Columbia (Canada), London School of Economics (UK), the University of Manchester (UK), Munster University of Applied Sciences

(Germany), etc. The most prominent international UBC researchers include H. Etzkowitz, L. Leydesdorff, D. Audretch, E.P. Berman, H. Nowotny, M. Wright, A. Lockett, P. D'Este, P. Patel, T. Baacken, A. Meerman, T. Davey, N. Fukugawa, etc.

The relationships and interaction between different participants of UBC ecosystem has received some attention in Lithuanian scientific literature. The major researchers of network management include A. Raipa who examined the network management in the structure of transformation of public governance (Raipa, 2007; Raipa, 2012), dimensions of the efficiency of public and private partnerships (Raipa et al, 2008), risk management in innovation management processes (Raipa and Giedraitytė, 2012), theoretical aspects of innovation in public governance (Raipa and Jurkšienė, 2013), organizational preparedness for change management (Raipa, 2013). A. Kaziliūnas explored the quality analysis, planning and audit (Kaziliūnas, 2006), quality management systems for sustainable organizational development (Kaziliūnas, 2008), development of knowledge model for quality management programmes (Kaziliūnas, 2011). D. Gudelis analysed the phenomenon of public-private partnership (Gudelis and Rozenbergaitė, 2004), models of interaction between public and private sectors (Gudelis, 2012). B. Melnikas analysed the society of transformations through the processes of knowledge economy, socio-economic development, culture, innovation, internationalisation and globalisation (Melnikas, 2011; Melnikas, 2013). B. Mikulskienė examined decision-making model based on stakeholder involvement into public policy formation processes in the area of education and R&D and health sectors (Mikulskienė, 2013). R. Jucevičius has explored the empowerment of social and technological innovations (Jucevičius et al., 2009), R. Jucevičius and V. Kinduris analysed knowledge networks for innovations, motives and benefits (R. Jucevičius and V. Kinduris, 2011). A. Augustinaitis has examined management direction in knowledges society and its relation to public administration (Augustinaitis, 2003; Augustinaitis, 2004; Augustinaitis, 2005). G. Viliūnas analysed the new knowledge paradigm and the transformation of research system management (Viliūnas, 2006). A.G. Raišienė examined the Lithuanian organization case studies from effective management perspective (Raišienė et al., 2014). I. Mačerinskienė examined the business perspective and intellectual capital measurement models (Mačerinskienė and Aleknavičiūtė, 2015), company added value relation to intellectual capital (Mačerinskienė and Survilaitė, 2011). N. Vasiljevienė examined positive initiatives for organizational change and transformation (Vasiljevienė and Tyagi, 2012), search for integrity for responsible business performance (Vasiljevienė, 2014). Recently several doctoral dissertations have been defended in the areas related to UBC governance. For example, Social Responsibility in the Management of University Research (Tauginienė, 2015), Models for Measuring Competitiveness of Science and Technology Parks (Leichteris, 2011), Knowledge Technology Transfer Policy in Lithuania (Kiškienė, 2010), University Research Modelling in the Context of Transformational Processes (Lanskoronskis, 2009).

Research on UBC governance internationally takes the following perspectives: network management (NM), knowledge management (KM) and/or innovation management (IM). The concept of KIM has been examined under the conditions of neoliberal reforms (Kim, 2008) or broader socio-economic system (Havas, 2008). The process of knowledge management has been explored including knowledge identification, encoding-decoding, dissemination, evaluation, implementation and securing (Probst, 1997; Probst et al., 2006). Innovation management including socio-economic implications, sociological,

psychological and political perspectives have been explored (Osborne and Brown, 2005). Several researchers have examined capacity to generate knowledge and exploit intellectual property rights via spin-offs (Friedman and Silberman, 2003; Ndonzuau et al., 2002), patenting (Landry et al., 2005; Wright et al., 2008; Thursby et al., 2007; Lissoni et al., 2008, Fabrizio and Di Minin, 2008), licensing (Siegel et al., 2003b; Link et al., 2003; Jensen et al., 2003; Thursby and Kemp, 2002), contract research or joint research agreements (Schartinger et al., 2001), joint scientific publications (Friedman and Silberman, 2003; Thursby and Kemp, 2002; Hall et al., 2001; D'Este, P. Patel, 2007).

The characteristics and major peculiarities of network management from socio-economic perspective were examined in the works of D. Scott, M.E. Newman, R. Agranoff, G. Ahuja, P. Boragatti, M.W. Cohen, etc. NM approach to UBC ecosystem management is examined from the network participants point of view including individual researchers (Etzkowitz and Leydesdorff, 1997; Feldman and Desrochers, 2003; an Rijnsoever et al., 2008), public university or business company (Santoro and Chakrabarti, 2002; Knoben, 2008; Giuliani and Arza, 2009; Berman, 2012), or public governance institutions' point of view (Barzelay, 1992; Agranoff and McGuire, 2003; Sorensen and Torfing, 2007; Boardman, 2008; McNabb, 2009; Koliba et al., 2011).

The major categories of factors influencing individual researcher's participation in UBC include demographic characteristics (gender, age), educational background (degree obtained, skills, capabilities, etc.), and position in the academic community (academic status, scientific output, experience, etc.) (Agrawal and Henderson, 2002; Bercovitz and Feldman, 2008; Friedman and Silberman, 2003; Di Gregorio and Shane, 2003; Landry et al., 2005; Santoro and Chakrabarti, 2002; Schartinger et al., 2001; Audretch and Erdem, 2004). Organizational level factors influencing university or business company participation in UBC include geographical proximity, the quality of R&DI and educational processes, performance evaluation and funding, knowledge and technology transfer support systems, disciplinary affiliation, organizational culture (O'Shea et al., 2005; Lockett et al., 2003; Lockett and Wright, 2004; Landry et al., 2006). Public governance level factors influencing UBC has been examined with regard to the evolution of NPM and NPG and the shift from Conventional or Mode 1 and Corporative or Mode 2 approach (Nowotny et al., 2001), the concepts of the Triple Helix, Quadruple Helix and Quintuple Helix models (Etzkowitz and Leydesdorff, 1997; Etzkowitz, 2000; Carayannis et al., 2012; Audretch and Erdem, 2004), development of international, national and regional UBC support structures (Agranoff and McGuire, 2003; Sorensen and Torfing, 2007; McNabb 2009; Berman, 2012).

The claims of the dissertation:

1. Theoretical framework for UBC governance has to be examined with regard to the evolution of New Public Management and New Public Governance doctrines, the shift from Conventional or Mode 1 to Corporative or Mode 2 approach behind university governance, and the nowledge creation and management models of the Triple Helix, the Quadruple Helix and the Quintuple Helix as they reflect the transition of societal values and mentality.
2. University and business divide in Lithuania is caused by weak UBC traditions, lack of strategic thinking and its communication, lack of leadership and consolidating part on the national level, missing cooperative and entrepreneurial culture.

3. Network management, knowledge and innovation management approach needs to be taken into consideration for successful UBC governance.

The object of the dissertational research is UBC governance in Lithuania.

The purpose of the dissertational research is to explore the concept of UBC governance and on the basis of theoretical and empirical research results develop a conceptual normative model that can enhance UBC governance practice in Lithuania.

The tasks of the dissertational research are the following:

1. To analyse theoretical framework of UBC governance;
2. To explore the experience and best practices of UBC governance in different European and North American countries;
3. To examine the case of UBC governance in Lithuania;
4. To develop the conceptual normative model for UBC governance in Lithuania.

Methodological approach for the dissertational research is a multi-method approach. The dissertational research was carried out by applying inductive and constructivism strategies. The holistic approach to UBC governance encompassing a broad and complex combination of social, legal, and managerial aspects of UBC ecosystem relationships and interactions between different stakeholders was taken (Berg, 2007).

Phenomenological strategy of social cognition was applied to examine the phenomenon of UBC governance and raise the fundamental questions about the meaning, essence and structure of the lived experience of UBC governance for the UBC ecosystem people in Lithuania (Patton, 2002; Hammersley, 2011; Gerring, 2012). The research was built on phenomenological suggestion that the world is constructed the way people understand it and that there is no separate objective reality for UBC ecosystem people except what they know their experience was and what it meant to them (Patton, 2008; Bergh and Ketchen, 2011). The dissertational research was based on the presumption that "the only way for us to really know what another person experiences, is to experience the phenomenon as directly as possible for ourselves" (Patton, 2002, p. 106).

Heuristic inquiry as a part of phenomenological strategy focusing on the personal experience and insights of the researcher was chosen as it enabled to connect the experiences of research participants, was concerned with meaning versus measurements, essence versus appearance, quality versus quantity, experience versus behaviour, and was built on the notion that discovery comes from direct personal contact to research object (Patton, 2002; Gerring, 2012). The theoretical and empirical research was grounded on the assumption that any information a researcher collects can potentially be used to answer the research question or to solve the research problem. Therefore, it included documentary analysis, observation of UBC ecosystem participant behaviour covering development of their thinking and actions, formal and informal discussions during all research stages in five year period (Berg, 2007; Hammersley, 2011; Gerring, 2012).

Integration of action research and fieldwork as knowledge acquisition strategy was chosen as it was based on the principle to research by acting and to act by researching which was relevant to my past and current work experience as a university research

manager (Patton, 2002; Berg, 2007; Hammersley, 2011). Action and fieldwork research was aimed to improve the work with UBC people or their groups, was widely accepted in management science and focused on research methods that took into account interactive, practice-oriented activities (Berg, 2007), as in the case of UBC governance. As a researcher engaged in the fieldwork research I would take one of four roles: participant, participant as observer, observer as participant and observer. In most cases I took on the participant as observer role due to my integrative position as a university research manager and Ph.D. student. As a researcher and a practitioner I had to constantly compare the received information with my personal experience and to view the observed reality from the position of a distant researcher and participant of the UBC ecosystem at the same time.

My major role as action researcher was to work "with and alongside the group or community under study, not outside as an objective observer or external consultant" (Berg, 2007, p. 230). I also contributed to research-based expertise on UBC governance as participant in the process, cooperated with other stakeholders, served as a partner to the researched population (Berg, 2007). Fieldwork method required intense and long-term observation of activities and interactions of participants of UBC ecosystem, hearing and reflecting on what university, business and public governance employees say, how do they behave and treat each other (Patton, 2002; Gerring, 2012).

Qualitative case study strategy was also chosen for dissertation because it provided depth, richness, and detail to really understand patterns of the research unit, that is UBC ecosystem in Lithuania (Patton, 2002; Gerring, 2012). In addition, it allowed to concentrate on the single phenomenon and uncover the system and interaction of significant factors characteristic to UBC governance in Lithuania. It also enabled to capture various nuances, patterns and more latent elements that other research approaches might have overlooked (Berg, 2007; Gerring, 2012). The aim of the qualitative case study was to analyse UBC governance in Lithuania "in depth and detail, holistically, and in context" (Patton, 2002, p. 55). Although qualitative case study is understood in different ways, in the context of this dissertational research it was comprehended as "an approach capable of examining simple and complex phenomenon, with units of analysis varying from single individuals to large corporations and business; it entails a variety of lines of action in its data-gathering segments, and can meaningfully make use of and contribute to the application of theory" (Yin, 2003 as cited by Berg, 2007, p. 283). The explanatory and intrinsic in-depth case study design was chosen because it could be used in complex studies of organisations or communities, as in the case of UBC ecosystem.

Moreover, a systemic-processual approach was chosen in order to understand, and address comprehensively the overall system of UBC, relationships between its various elements, relations, their influence to each other and the process of establishing and maintaining UBC. Sustainable approach was also regarded to ensure that measures designed and implemented during the dissertational research would generate continuous benefits to all UBC stakeholders.

The major stages of dissertational research were the following: 1) identifying the research question, 2) collecting information to answer the research question by applying such methods as examination of scientific and methodological literature, documentary analysis, comparative case analysis, case study, and expert interviews, 3) analysing and interpreting the information and 4) providing potential solution of the questions identified during the first stage in the form a conceptual normative model (Berg, 2007).

The research consisted of theoretical meta-analysis and empirical research. Theoretical meta-analysis included systematic and comparative analysis of scientific literature. The empirical research was carried out by implementing the principle of triangulation and integrating different qualitative research methods: documentary analysis, comparative case analysis, case study and semi-structured in-depth expert interviews.

Documentary analysis as data and information collection method was chosen because documented strategies, mission and vision statements, statutes, etc. constitute a particularly rich source of information about universities, business companies and public governance. UBC ecosystem players' especially public governance produce numerous documentary records. Thus, documentary strategy and technique analysis was a part of the research and evaluation of the status quo (Patton, 2002; Hammersley, 2011). A documentary analysis was carried out aiming to explore and compare official statements found in public documents – national and organizational agendas. They provided much information, including strategies, goals, measures and decisions regarding UBC.

Interview method was chosen for empirical research based on the assumption that it is noteworthy to know informant attitudes, evaluation and opinion. The purpose of interview was to enter in the informant's perspective and explore the reality the way participants of UBC ecosystem comprehend it. As methodological literature suggests, interview in a qualitative research was also an observation enabling not only to hear what informant was saying but also how he/she spoke and behaved. The interview method allowed to receive the information not only through verbal answers but also through emotional reactions, informants could be chosen according to their intellectual and experience level as well as attitude towards UBC (Patton, 2002; Hammersley, 2011).

Simple modelling and logical construction method were applied for the development of the conceptual normative UBC governance model. It entailed two major stages: 1) priority setting based on the main areas in need of improvement and/or main areas where the potential for UBC lies; 2) process of drafting the conceptual normative model including major factors and constituencies.

Theoretical significance and scientific novelty include innovative application of methodology, holistic approach and identification of dominant theoretical perspectives. UBC governance phenomenon was examined with regard to the evolution of NPM and NPG and the shift from Conventional or Mode 1 to Corporative or Mode 2 approach and by integrating Systems, Institutional and Stakeholder theories. Current trends of UBC governance phenomenon were explored by applying network management and knowledge and innovation management theoretical constructs. A unique and innovative conceptual normative model for UBC governance applicable to the Lithuanian context was designed. Finally, UBC governance concept internationally was supplemented by Lithuanian experience and practice. The outcome of the dissertational research includes innovative application of methodology, theoretical meta-analysis and integrative approach to NPM, NPG, the shift from Conventional or Mode 1 to Corporative or Mode 2 approach, Systems, Institutional and Stakeholder theories, network and knowledge management perspectives, comparative case analysis of UBC governance in Europe and North America, case study of Lithuanian UBC governance ecosystem, and the conceptual normative model of UBC governance applicable to Lithuanian context.

Practical value and impact of the dissertation could be outlined from the university, business and public governance perspectives. The research outcome can have a practical value and impact on behaviour shift (UBC ecosystem participants would become more UBC sensitive, leaders would become aware of UBC motivational systems and incentives, etc.) that later can be measured by surveys or other behaviour change measurement methods. Furthermore, availability of the research outcome can strategically position UBC within university and business strategies, the measures of which could be managed, regularly monitored and sustainable in a long run. Human resource management can be modernized through UBC governance policies, practices and processes. In addition, the research outcome can be used for developing and implementing national UBC governance strategies and agendas. It can be used for research evaluation, university performance evaluation, benchmarking Lithuanian universities, their units, individual researchers. The research identified the problems of UBC governance in Lithuania and proposed solutions as well as further development directions. Finally, the research outcome could be used in further research and learning, both formal and informal, processes.Based on the theoretical meta-analysis and empirical research the following conclusions were made.

Analysis of the theoretical framework for UBC governance

1. Theoretical framework for UBC governance can be examined with regard to the evolution of NPM and NMG. Aimed at modernization and efficiency of university services as public services NPM and NPG enhanced the emergence and expansion of Corporative or Mode 2 approach to university governance. The doctrines introduced market-oriented management culture into higher education aimed to better allocate public budget resources and dominated by 3 major principles: economy, efficiency and effectiveness. Characteristics of NPM suggested by D. Osborne and T. Gaebler and NPG suggested by S.P. Osborne including catalytic government, community-owned government, competitive government, mission-driven government, results-oriented government, customer-driven, enterprising government, decentralized government can betransferred to public university governance.
2. UBC governance has to be analysed with regard to the shift from Conventional or Mode 1 to Corporative or Mode 2 approach to university governance. Corporative of Mode 2 approach explains the emergence of business governance culture in universities including the shift from elite to mass education, from fundamental to applied research, from basic to competitive university funding schemes. The shift also introduced business governance practice in public universities including strategic management, mission and vision statements, efficient resource allocation, introduction of marketing terms previously unfamiliar to academic environment.
3. UBC governance can be analysed from the development perspective of the Triple Helix, the Quadruple Helix and the Quintuple Helix knowledge management models as they reflect to development of societal values and mentality. The Triple Helix model indicates a three-dimensional perspective of innovation and socio-economic development between university, business and government, the Quadruple Helix model adds the element of the general public which is based on culture, media, and art, and the Quintuple Helix model contributes to UBC governance concept by adding the 'natural environments of society'.

4. Integrative approach to Systems theory, Institutional theory and Stakeholder theory can be taken into consideration when exploring the phenomenon of UBC governance. Systems theory introduces connectedness, interaction, feedback, relationship perspective and helps to answer the question how and why does UBC system function as a whole. Institutional theory can be applied in the analysis of UBC governance phenomenon from isomorphic, institutional logics, and institutional work perspectives. It explains the current status of UBC as a consequence of conflicting institutional logics between the mentality inherited fromm the Soviet times and public governance attempts to change it on the grounds of UBC forces from the European Union and North America. Stakeholder theory was applied to explain the principle values of business and university governance.
5. UBC governance can be analysed from network, knowledge and innovation management perspectives. Network management perspective helps to answer the questions how can universities and businesses best organize themselves in order to benefit from each other's resources, do UBC networks present mechanisms for priority setting, decision-making and fundraising purposes, what mechanisms and patterns encourage UBC. Network management perspective was examined from individual researchers, organizational and public governance perspectives. Knowledge and innovation management perspective examined knowledge generation, accumulation, transfer, application, and measurement processes that are caused by UBC.

Exploration of the experience and best practices of UBC governance in different countries

Based on the analysis of scientific literature, current international reports and innovation ratings the international context of UBC governance was examined by providing examples of UBC governance experience and best practice in Europe and North America.

1. The UBC experience and best practice in the Anglo-Saxon countries including the current situation, UBC support structures in the United Kingdom, Ireland, United States of America and Canadawas examined. The conclusion was made that the Anglo-Saxon countries take the leading position in UBC due to the well-developed and communicated UBC support structures and liable organisations.
2. The German-speaking countries continue the strong tradition of UBC governance. They have a well-developed UBC governance system and are considered innovation leaders in Europe. Universities are increasingly engaged in collaborative research with private companies due to a number of support measures that make UBC mandatory in order to receive research grants. Recently emphasis has been placed on knowledge and technology transfer especially from universities of applied sciences to business, innovation policy has a broad approach including linkages towards educational policies and other social and economic framework conditions, have a well-coordinated and consistent public policy, and advance not from imitation but from a radical innovation strategy.
3. The Francophonic and Benelux countries are developing the tradition of UBC and are considered as innovation followers. Innovation via UBC is driven by several agencies that form sustainable public-private partnerships involving public research

and knowledge and/or technology transfer. In Francophonic and Benelux countries UBC and innovation are delegated to regions. Although traditionally the emphasis of most funding initiatives has been focused on technological innovation related to the commercialisation R&D results, recently the shift has been also made to non-technological innovations. The major strategic agendas outline a long-term perspective and promote UBC with regard to the challenges facing society.

4. The Scandinavian countries foster the pragmatic tradition of UBC and are considered innovation leaders in Europe due to empowering universities with the right to invention ownership. The extensive geographical network of universities has regional units, various innovation platforms and incubators. UBC governance is based on the mentality that UBC is crucial for implementing university mission, increasing graduate skills, bringing added value to local industry, creating employment and disposable income. The pragmatic approach to UBC is substantiated by the well-established environment, entrepreneurship in education and establishing researchers' employment and working conditions as national priority.
5. The Southern European countries are considered as having moderately developed UBC tradition because UBC governance is dominated by the public sector and marked by high degree of centralisation though during the last years the countries have developed policies facilitating UBC. The national R&D and innovation priorities are set by the national and regional strategies.
6. The Central and Eastern European countries are building the tradition of UBC and are considered as moderate innovators with the innovation performance below the EU average. It is caused by the lack commitment and cultural orientation towards UBC, R&D systems are still dominated and encouraged by public funding and central governance, motivation and value system between different members of UBC ecosystem are different, business has limited capacity to absorb research findings, and bureaucracy at universities hinder UBC development. However, aiming to re-orientate the economy to UBC and knowledge-intensive business activities there are a number of well-established measures, EU structural funding is allocated to UBC which indicates UBC progress in Central and Eastern Europe.

Case study of UBC governance in Lithuania

1. Lithuania together with other countries of Central and Eastern Europe is considered as the moderate innovator and has a specific context of UBC development. The Restoration of Independence has gradually transformed UBC governance landscape, however, the reforms were slow in higher education area and UBC was not at the core of academic and public discourse. The breakthrough was achieved after the Government made a decision to allocate up to 10% of the total EU structural funding for 2007–2013 to research. Consequently, UBC enhancing schemes such as valleys and clusters with investment from the national budget and structural funds for the period of 2007–2013 were introduced. In 2010 the Government put an emphasis on UBC by approving Lithuanian Innovation Strategy for 2010–2020, establishing the Science, Technology and Innovation Agency and allocating funds for UBC collaborative projects.

2. The Systems theory can help to identify the connections, interface and patterns of Lithuanian UBC ecosystem. The organizational structure includes individual researchers and business people, universities and business companies, associations, forums, non-governmental organisations and public governance institutions the activities of which are related to UBC and innovation development. It was concluded that Lithuania has a well-developed UBC legislation and moderately developed system of UBC support measures. In addition, there is the gap between UBC on strategic and operational management on the national and institutional level. Lithuania has several good examples and best practices of UBC governance in the fields of biotechnologies, laser and chemistry industries.
3. The Institutional theory was applied to identify the dominant characteristics of Lithuanian UBC ecosystem and explain it fromm contradicting institutional logics perspective. The conclusion was made that Lithuanian UBC ecosystem lacks commitment and cultural orientation to UBC which is mostly caused by the shift from the Soviet planned economy to Western European market mentality, from Conventional or Mode 1 approach to Corporative or Mode 2 approach to university governance.
4. Stakeholder theory was applied to identify structural, relational and educational factors of UBC ecosystems. Structural factors include long-term strategies, mission and vision statements, national and organizational UBC support structures. Relational factors include trust and mutual understanding, ability to connect academic and business sectors, commitment and shared vision and the result-oriented activities. Educational factors include the development of cooperative and entrepreneurial culture, knowledge on the major principles of university and business missions and functions, and knowledge and innovation management perspectives including knowledge identification, distribution, application, protection and measurement.
5. Empirical research has revealed the following structural shortcoming of Lithuanian UBC ecosystem. Long-term strategic thinking and its communication throughout all management levels are missing. There is a need for leadership and consolidator on the national level. Motivational structures and systems need to be developed to engage university and business sector employees to take part in UBC on the operational level. The national and institutional UBC governance system needs to be re-focused on the ultimate objectives and not on the process. Empirical research results have also revealed that university and business sector employees do not have a profound understanding of the ultimate objectives of the university and business, and, consequently, speak "different languages". Therefore, there is a need for "interpreters" or mediators who have knowledge of how university and business operate. Finally, the mission of education system needs to be extended towards building cooperative and entrepreneurial culture in Lithuanian society.

Conceptual normative model of UBC governance in Lithuania

1. Based on empirical research finding and applying simple modelling and logical construction method conceptual normative model of UBC governance in Lithuania was designed. It was built on the presumption that closer relations between universities and business is the prerequisite for the national competitive position on the global market, overcoming modern societal challenges, implementing three-fold university mission, bringing added value to local industry, creating employment and disposable income. Therefore, well-established external and internal national and institutional environment for UBC and innovation needs to be established based on network, knowledge and innovation management perspectives.
2. The conceptual normative model for UBC governance includes the internal and external environment of two major UBC ecosystem participants – universities and business companies. The external UBC environment includes international and national factors. International factors cover global changes in university, business and public governance sectors during the last decade, internationalisation of studies and R&DI, scientific and cultural migration, multiculturalism, and favorable international geopolitical situation, the initiatives and best practices of foreign countries in UBC governance on the European and national level. The national environment includes socio-economic and socio-cultural aspects including the tradition of UBC, the national mentality behind it, legislation, political system, national business, research, innovation context, associations, communities, non-governmental organisations operating in the country.
3. University internal environment (factors and constituents with regard to UBC) include six major categories: quality of R&DI and studies, university leadership attitude towards UBC and innovation, university interest and engagement in national and international UBC support structures, university internal UBC support structures, UBC-related performance measurement systems, and university preparation for change.
4. The main factors and constituents of business company internal environment include identifying or developing demand for R&DI and specialist competences, business leadership attitude towards UBC and innovation, business interest and engagement in the national UBC support structures, business company internal UBC support structures, UBC-related performance measurement systems and business company preparation for change.
5. The architecture of the conceptual normative model for UBC governance include the evolution of NMP and NMG, the shift from Conventional or Mode 1 to Corporative or Mode 2 approach, the evolution of knowledge management models from the Triple Helix through the Quadruple Helix to the Quintuple Helix models, the shift from the hierarchical to network management, and the integrative approach to Systems, Institutional and Stakeholder theories.
6. The conceptual normative model of UBC governance includes strategic level, operational level, result level, outcome level and impact level. They are an integral part of both internal and external environment for UBC. University internal environment and business company internal environment are interconnected to these levels. Strategic level covers strategic documented national and organizational agendas, the involvement of all UBC ecosystem stakeholders, developing UBC support structures,

and resource allocation to UBC by public governance institutions. The operational level refers to UBC performance including human resource, financial management systems. Result level refers to results gained from UBC. The outcome level includes the contribution to university study programmes, R&DI processes, business profit mark-up level caused by UBC. The impact level covers general contribution to socio-economic processes and regional development.

Recommendations to university governance

1. UBC governance has to be included in strategic long-term and operational short-term university governance documents (statutes, strategies, annual action plans, etc.) and widely communicated throughout an organization (via internet, intranet, e-mails, newsletters, word of mouth, etc.) in a positive and opportunity opening way (best practices, success cases, etc.). This recommendation applies to all public university strategic management including rectorates, senates, councils as well as operational management involving faculties, institutes, laboratories, directorates, centres, services.
2. University governance has to ensure that there are relations established between strategic and operational management levels, minimising the gap between the declarative and the real situation. This recommendation applies to all public university strategic management (rectorates, senates, council) as well as operational management (faculties, institutes, laboratories, directorates, centres, services, etc). A centralised work group responsible the correspondence between the declarative and real UBC situation has to be established, annual audits, surveys have to be carried out to evaluate the status quo and the desired outcome.
3. UBC is based on interpersonal interaction, therefore, based on Stakeholder theory the major task for university governance is to develop schemes and structures that motivate individual researchers and students to network with business sector employees aiming to provide concrete cooperation results and outcome that have an impact on overcoming societal challenges. This recommendation applies to all public university strategic management (rectorates, senates, councils, etc.) as well as operational management level (faculties, institutes, laboratories, directorates, centres, services, etc). The best measure to implement the recommendation is UBC element inclusion of into human resource management schemes including employment, remuneration, and promotion with an emphasis on concrete results achieved as a consequence of UBC. In addition, university governance has to ensure platforms and schemes for university and business people to meet informally (networking events, business lunches, etc.).
4. Based on Institutional theory and knowledge management perspective university governance needs to develop structures that ensure generation, identification, distribution, application, protection, measurement and commercialisation of knowledge gained from UBC. This recommendation applies to all public university strategic level management (rectorates, senates, and councils). The recommendation can be implemented through the establishment of centralised knowledge, innovation and data repositories and assigning units (library, research office, project office centres, and knowledge and/or technology transfer office, etc.) and concrete persons responsible for the development and implementation of knowledge management. Annual knowledge

management reporting to the university strategic and operational management and academic community has to be carried out. Successful cases need to be communicated to the academic community and nationally, recognised and awarded.

5. UBC has to be included in university performance evaluation schemes (individual researcher, department, institute, faculty, laboratory, etc.). This recommendation applies to all public university strategic level management (rectorates, senates, and councils) as well as operational level management (faculties, institutes, laboratories, directorates, centres, services, etc.). Data collection has to be carried out based on individual researcher's performance once per calendar year via electronic online systems. Performance evaluation can be carried out by external international experts who could rank each individual researchers on the scale of five points. All university researchers can be ranked according to the average evaluation score and recognised, remunerated, awarded, and promoted accordingly. Successful cases and top researchers need to be communicated in the academic community and nationally, recognised and awarded. The performance evaluation of a department, institute, faculty or laboratory can be based on the sum of its members. Funds from the university budget need to be allocated to the units according to the annual performance results.
6. Universities need to develop basic competencies as creative, analytical and reflective thinking, international, inter-disciplinary and inter-sectorial cooperation and entrepreneurship. These elements need to be included into the curriculum of all lifelong educational study programmes. This recommendation applies to all public university strategic management (rectorates, senates, and councils) as well as operational management level (faculties, institutes, laboratories, directorates, centres, services responsible for educational processes, etc.). These competencies need to be introduced into all study programmes of all three study levels. Units and concrete persons need to be assigned to monitor, measure and improve the schemes of competence quality development schemes. The desired competencies need to be widely communicated via organizational documents (strategies, annual activity plans, etc.), media (intranet, newsletter, e-mails) and work of mouth (meetings, training, qualification improvement events, etc.).

Recommendations to business governance

1. UBC governance has to be included in strategic and operational business management documents (strategies, annual activity plans, etc.) and widely communicated (via intranet, e-mails, newsletters, work of mouth, etc.) in an organization in a positive and opportunity opening way (through best practices, success cases, etc.). This recommendation applies to all business management on the strategic (CEOs, Boards of Directors, etc.) and operational level (unit, department, etc.) management.
2. Business management has to ensure that there are relations established between strategic and operational management levels, minimising the gap between the declarative and the real situation. This recommendation applies to all business management including strategic (CEOs, Board of Directors, etc.) and operational level (unit, department, etc.) level. A work group responsible the correspondence between the declarative and the real situation has to be established, annual audits, surveys have to be carried out to evaluate the relation between the status quo and the desired outcome.

3. UBC is based on interpersonal interaction, therefore, based on Stakeholder theory business companies need to motivate their employees to network with university researchers and students aiming to provide concrete cooperation results that have an impact on solving societal challenges. This recommendation applies to all business strategic management including (CEOs, Board of Directors, etc.) as well as operational level (unit, department, etc.) management. The best mechanism to implement the recommendation is the nclusion of UBC into human resource management schemes including employment, remuneration, and promotion with an emphasis on concrete results achieved as a consequence of UBC. In addition, operational level (units, departments, etc.) management has to ensure platforms for university and business people to meet informally.
4. Based on Institutional theory and knowledge management perspective business companies needs to take a more proactive approach to UBC as a source of knowledge and develop structures that ensure generation, identification, distribution, application, protection, measurement and commercialisation of knowledge gained UBC. This recommendation applies to all business strategic management (CEOs, Board of Directors, etc.). The recommendation can be implemented through the establishment of centralised knowledge, innovation and data repositories and assigning units and concrete persons responsible for the development and implementation of knowledge management and commercialisations. They could be sales or production management office staff. Annual knowledge management reporting to the business strategic and operational management and academic community has to be carried out. Successful cases need to be communicated throughout the business company and beyond, widely recognised and awarded.
5. UBC has to be included in business company performance evaluation schemes (individual employee, department, unit, etc.). This recommendation applies to business company strategic management (CEOs, Board of Directors, etc.) and operational management level (Human Resource department, Finance department, etc.). Data collection has to be carried out based on individual business sector employee level once per calendar year via electronic and/or online systems. Successful cases emphasizing individual input need to be communicated throughout the business company and beyond, widely recognised and awarded. The performance evaluation of a department or unit can be based on the sum of its members. Bonuses need to be provided to the departments and units according to the annual UBC performance results.

Recommendations to public governance institutions liable for UBC

1. UBC governance has to be included in strategic long-term and operational short-term national documents (strategies, agendas, etc.) and widely communicated to general public (TV, radio, internet portals, public governance websites, national and regional newspapers, magazines, social media, meetings, trainings, events, etc.,) in a positive and opportunity opening way (through best practices, success cases, award systems, etc.). This recommendation applies to the Ministry of Education and Science, the Ministry of Economy, the Agency of Science, Innovation and Technology (MITA),

the Research Council of Lithuania (LMT), the Lithuanian Academy of Science, Parliamentary Committee on Education, Science and Culture.

2. Public governance institutions liable for UBC have to ensure that there are relations established between strategic and operational management levels, minimising the gap between the normative and operational level performance. This recommendation applies to the Ministry of Education and Science, the Research and Higher Education Monitoring and Analysis Centre (MOSTA), the Ministry of Economy, the Agency of Science, Innovation and Technology (MITA), the Research Council of Lithuania (LMT), the Lithuanian Academy of Science, Parliamentary Committee on Education, Science and Culture. The major mechanisms include research evaluation methodology and allocation of funding schemes to universities.
3. UBC is based on interpersonal interaction, therefore, based on Stakeholder theory the major task for public governance is to develop schemes and structures that motivate universities and business, and their employees, in particular, to network aiming to provide concrete cooperation results that have an impact on solving societal challenges. Based on Institutional theory and knowledge management perspective public governance needs to develop structures and systems that promote commercialisation of knowledge gained from UBC. This recommendation applies to the Ministry of Education and Science, the Research and Higher Education Monitoring and Analysis Centre (MOSTA), the Ministry of Economy, the Agency of Science, Innovation and Technology (MITA), the Research Council of Lithuania (LMT). The major mechanisms for implementation include research evaluation methodology and allocation of funding schemes to universities, providing funding for collaborative projects, developing schemes and platforms for university and business people to network, and widely communicating it through mass media (TV, radio, internet portals, public governance websites, national and regional newspapers, magazines, social media, etc.), word of mouth (events, conferences, trainings, etc.).
4. UBC has to be included in institutional university performance evaluation including study and R&DI evaluation schemes. This recommendation applies to the Ministry of Education and Science and the Research Council of Lithuania (LMT). The major mechanisms for implementation include research evaluation methodology and allocation of funding schemes to university research, Ph.D. and Master level studies.
5. Public educational institutions of all levels need to development basic competencies as creative, analytical and reflective thinking, international, inter-disciplinary and inter-sectorial cooperation and entrepreneurship. This recommendation applied to the Ministry of Education and Science. These competencies need to be introduced into all study programmes of all three study levels. The desired competencies need to be widely communicated via national strategic documents (long-term and short-term strategies, university annual activity plans, etc.), (TV, radio, internet portals, public governance websites, national and regional newspapers, magazines, social media, etc.), word of mouth (events, conferences, trainings, etc.).

Recommendations for further research:

1. Such areas as UBC ecosystem management with regard to anthropological and cultural aspects will bring added value to UBC research.
2. UBC research with regard to societal values and identity will be scholarly interesting and beneficial.
3. Research on shifting university researchers' identity should also provide added value to UBC research as it could reveal how do individuals sense themselves and act in work situations, their rationale and justification for certain actions.
4. Research on UBC from the perspective of security, justice, human rights can be applied to overcoming modern societal challenges.
5. UBC governance research with regard to the expansion of information and communication technologies and social media will be scholarly interesting and beneficial to society.
6. UBC governance in the light of quality of life, smart, sustainable and inclusive societies will also bring added value to academic societies and the general public.
7. UBC as an integrative means between different academic disciplines and economic sectors emphasizing the role of social sciences and humanities in developing UBC practice should be an interesting and beneficial research object.
8. Longitudinal research on the formation and development of the existing of UBC cooperative patterns from the historical perspective would contribute to UBC research.
9. Research on the ability to develop UBC partnerships from juvenile friendships, networks and cooperation experiences such as, for example, high school or university classmates, neighbourhoods, sports or hobby clubs, early career peers, would make an enormous contribution and insights to the existing UBC research.
10. Demographic and intergenerational studies with regard to UBC ecosystems management would also contribute an additional value to the existing body of UBC theoretical and empirical research.
11. Research on gender issues impact on UBC practice would give added value to UBC research.
12. The solution of the environmental issues, climate change and promotion of sustainable communities with regard to UBC governance could also be the object of theoretical and empirical research.
13. Research on the relations between UBC in overcoming societal challenges of health and healthy living would be an interesting and beneficial future research direction.
14. Research on the relationship between UBC, mediation and sustainable dispute resolution would be an interesting research object.
15. UBC research with regard to multiculturalism would help Europe in solving refugee issues.

SCIENTIFIC PUBLICATIONS

PUBLICATIONS ON THE SUBJECT MATTER OF THE DISSERTATION

Articles in Lithuanian peer-reviewed journals

1. Gudelienė, Nomeda. Shifting university values, mission and organisational culture: a dilemma for leadership // Social media : challenges and opportunities for education in modern society : research papers = Socialinės medijos : iššūkiai ir galimybės suaugusiųjų švietimui. Vilnius: Mykolas Romeris University. ISSN 2335-738X. Vol. 1, No 1, 2013, p. 78–82.
2. Justickis, Viktoras; Gudelienė, Nomeda; Plenta, Juris. New medical knowledge: what socio-managerial mechanisms enhance its application in health care practice? // Societal innovations for global growth : research papers = Socialinės inovacijos globaliai plėtrai. Vilnius: Mykolo Romerio universitetas. ISSN 2335-2450. 2012, No. 1(1), p. 906–926.

OTHER PUBLICATIONS

Articles in foreign peer-reviewed connference proceedings

1. Urbanovič, Jolanta; Vasiljevienė, Nijolė; Žalėnienė, Inga; Gudelienė, Nomeda. Research on academic integrity. The role of awareness of local environment in developing university anti-plagiarism strategy // Plagiarism across Europe and beyond 2015 : conference proceedings : June 10–12, 2015 Brno, Czech Republic / Mendel University in Brno. Brno: Mendelu Publishing Centre, 2015, ISBN 9788075092670. P. 75-90.

Publications in scientific sources, scientific reviews, atticles in cultural, professional and science promoting journals

1. Tauginienė, Loreta; Gudelienė, Nomeda. Mykolas Romeris University [Lithuania]. Doctoral studies' history // History of doctoral programmes in management and business administration: EDAMBA : 20 Years of Cooperation 1991-2011 / editors : Eduart Bonet, Károly Balaton. [Brussels]: EDAMBA, [2012]. P. 141-144.

Abstracts in peer-reviewed conference proceedings

1. Gudelienė, Nomeda. University mission and organisational culture: a dilemma for leadership // Social media : challenges and opportunities for education in modern society: international interdisciplinary scientific conference : abstract book, May 3, 2012 [elektronic source] / Mykolo Romerio universitetas. Vilnius: Mykolo Romerio universitetas, 2012, ISBN 9789955194583. P. 16.
2. Justickis, Viktoras; Plenta, Juris; Gudelienė, Nomeda. Research application mechanisms in medical practice // SOCIN 2012: 1st international interdisciplinary conference on social innovations: abstracts' book of Mykolas Romeris University research days 2012 "Social innovations: theoretical and practical insights" [electronic source] / Mykolas Romeris University. Vilnius: Mykolas Romeris University, 2012, ISBN 9789955194590. P. 266-267.

Articles and abstracts in not reviewed conference proceedings

1. Gudelienė, Nomeda;Tauginienė, Loreta. Joint Doctoral Studies and Research in Lithuania: Mykolas Romeris University's Experience and Practice // International Seminar on Joint Degrees : Final seminar of the JOIMAN project : [elektroninis išteklius] 10/29/2010. [Vilnius: Vilniaus universitetas, 2010]. p. 1–9.

Other books

1. Geoghegan-Quinn, Máire; Petrauskaitė, Rūta; Mayer, Katja (ed.); König, Thomas (ed.); Nowotny, Helga (ed.); Gudelienė, Nomeda (copy editor). Horizons for Social Sciences and Humanities: Conference Report : September 23-24th, 2013 Mykolas Romeris University, Vilnius, Lithuania / Mykolas Romeris University ; edited by: Thomas König, Katja Mayer, Helga Nowotny ; copy editor Nomeda Gudelienė. Vilnius : Mykolas Romeris University, 2014. 199 p. : iliustr. ISBN 9789955196259.

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Santrauka

Temos aktualumas. Naujų žinių kūrimas ir jų perdavimas rinkai novatoriškais bei patraukliais produktais ir/ar paslaugomis yra žinių visuomenės varomoji jėga, lemianti universitetų, verslo ir valstybės konkurencinę poziciją globalioje rinkoje. Technologiškai pažangus šiuolaikinis pasaulis skatina nuolatinį inovacijų kūrimą ir transformacijas: atsiranda nauji žinių kūrimo, perdavimo ir taikymo būdai, nyksta valstybių sienų sąlygoti rinkų apribojimai, universitetai, verslo įmonės ir viešosios valdžios institucijos vis labiau bendradarbiauja pridėtinę vertę kuriančiuose tinkluose. Nors mokslininkai ir praktikai sutaria, kad naujų žinių perdavimas iš mokslininko laboratorijos į praktiko darbo vietą yra pagrindinis visuomenės pažangos ir gyvenimo kokybės kėlimo būdas (Phillips, 2010), valstybinių universitetų ir verslo bendradarbiavimas (UVB) yra vienas pagrindinių vadybos iššūkių tarptautiniu mastu.

Per pastaruosius du dešimtmečius sparčiai pasikeitė valstybinių universitetų, verslo įmonių ir viešosios vadybos aplinka. Šiuolaikiniai valstybiniai universitetai, sąlygojami Naujosios viešosios vadybos ir Naujojo viešojo valdymo doktrinų raidos, veikia virsmo nuo tradicinio į korporatyvinį vadybos modelį sąlygomis. Tradiciškai valstybinio universiteto misija buvo dvejopa – studijos bei moksliniai tyrimai ir eksperimentinė plėtra (MTEP). Verslumas, komercinių paslaugų teikimas, bendradarbiavimas su verslo įmonėmis nebuvo siejami su akademiniu pasauliu ir sutinkami akademiniame diskurse. Pastaruoju metu įsigalėjo korporatyvinis požiūris į valstybinių universitetų vadybą, kurio pagrindiniai bruožai yra perėjimas nuo elitinio prie masinio universitetinio išsilavinimo, nuo fundamentinių prie taikomųjų mokslinių tyrimų, nuo bazinio prie konkursinio MTEP finansavimo. Korporatyvinio požiūrio sąlygota terminija, pavyzdžiui, studijų programų rentabilumas, efektyvus išteklių panaudojimas, verslumo kultūros puoselėjimas tampa valstybinių universitetų vadybos praktika. Įsigali trečioji universiteto misija – tarnystė ir/ar paslaugos visuomenei. Siekdami geriau patenkinti šiuolaikinės visuomenės edukacinius ir MTEP poreikius bei lūkesčius valstybiniai universitetai susiduria su poreikiu bendradarbiauti ir kartu su kitomis viešojo bei privataus sektoriaus institucijomis kurti pridėtinę viešąją vertę (Etzkowitz 2003; Etzkowitz ir Leydesdorff 2000).

Verslo aplinka taip pat pasikeitė per porą pastarųjų dešimtmečių. Globalizacija, informacinių ir komunikacinių technologijų sąlygoti konsoliduoti žinių ir informacijos šaltiniai sumažino rinkos apribojimus, paskatino e-verslo ir daiktų interneto plėtrą, geresnę prieigą prie žmogiškųjų, finansinių ir infrastruktūros resursų. Siekiant, kad verslas būtų konkurencingas ir geriau patenkintų rinkos ir visuomenės poreikius bei lūkesčius, įmonės turi nuolat kurti inovatyvius, MTEP paremtus produktus ir/ar paslaugas, turėti prieigą prie žinių, informacijos ir talentų duomenų bazių.

Viešoji vadyba taip pat pasikeitė per pastaruosius dvidešimt metų. E-valdžios plėtra, Naujosios viešosios vadybos ir Naujojo viešojo valdymo doktrinų raida ir įsigalėjimas, dalyvavimas tarptautiniuose tinkluose ir aljansuose pakeitė nacionalinę ir tarptautinę

viešosios vadybos sistemą. Pavyzdžiui, Europos Sąjungos augimo ir darbo vietų kūrimo strategija Europa 2020 nustatė poreikį įveikti švietimo ir užimtumo, mokslinių tyrimų ir eksperimentinės plėtros, klimato kaitos ir energetikos, socialinės atskirties ir skurdo mažinimo iššūkius sumaniai, tvariai ir įtraukiai plėtrai. Tai galima pasiekti skatinant žinių visuomenės, paremtos universitetų, verslo ir viešosios vadybos bendradarbiavimu, plėtrą. Viešajame diskurse nebekvestionuojama, ar universitetams, verslo įmonėms ir viešosios valdžios institucijoms reikia bendradarbiauti, bet ieškoma sprendimų, kaip bendradarbiauti, kad būtų patenkinti visų suinteresuotųjų šalių ir visuomenės poreikiai.

Lietuva turi specifinį UVB kontekstą. Nepriklausomybės atkūrimas palaipsniui keitė valstybinių universitetų, verslo ir viešosios valdžios institucijų bei inovacijų kūrimo aplinką ir sistemą. Kartu su kitomis Rytų ir Centrinės Europos valstybėmis Lietuva perėjo nuo socialistinės prie rinkos ekonomikos. Nors rinkos ekonomikos sąlygojamas mentalitetas po truputį įsitvirtino Lietuvos visuomenėje, pirmuosius dešimt Nepriklausomybės metų UVB nepateko į valstybės prioritetus. Valstybiniai universitetai toliau buvo finansuojami iš valstybės biudžeto, puoselėdami savo autonomiją ir tradicijas veikė atskirai nuo privataus sektoriaus intervencijų, verslo įmonės nelabai domėjosi universitetų veikla, UVB nebuvo sutinkamas ir viešajame diskurse.

Situacija pasikeitė per pastarąjį dešimtmetį įsigalėjus Naujosios viešosios vadybos ir Naujojo viešojo valdymo doktrinoms. Įvesta mokamų studijų sistema, sumažėjo valstybinių valstybinių universitetų bazinis finansavimas, pereita prie konkursinio MTEP finansavimo schemų, įdiegtos UVB skatinančios priemonės, tokios kaip slėniai, mokslo ir technologijų parkai, klasteriai, kurie buvo finansuojami nacionalinio biudžeto ir 2007–2013 m. Struktūrinių ir investicinių fondų lėšomis. Be to, Europos Komisijos paskatos, Vakarų Europos bei Šiaurės Amerikos valstybių pavyzdžiai ir geroji praktika nukreipta į žinių trikampio tarp valstybinių universitetų, verslo ir valdžios institucijų kūrimą, paspartino Lietuvos UVB procesus. Pakilo Lietuvos inovacijų reitingai tarptautiniu lygiu. Pavyzdžiui, Pasaulio ekonomikos forumo atlikto Pasaulio konkurencingumo indekso duomenimis Lietuva pakilo iš 48 pozicijos 2013–2014 m. į 41 vietą 2014–2015 m. (Global Competitiveness Report 2013–2014; Global Competitiveness Report 2014–2015). Pagal „universitetų ir verslo bendradarbiavimo MTEPI veiklose“ rodiklį Lietuva užėmė 28 vietą pasaulyje iš 144 vietų 2014–2015 m. Siekiant paskatinti UVB sąlygotą viešosios vertės kūrimą, sekantis žingsnis būtų UVB vadybos procesų tobulinimas iš universiteto, verslo ir viešosios valdžios institucijų perspektyvos.

Disertacinis tyrimas kilo iš asmeninių paieškų siekiant spręsti kasdieninės praktikos problemas ir sprendimus pagrįsti moksliniais tyrimais. Daugiau nei šešerius metus dirbau Mykolo Romerio universiteto Mokslo centre, daugumą laiko teko jam vadovauti, o pagrindines pareigas apėmė mokslo vadyba ir bendradarbiavimas su išoriniais partneriais. Atsirado poreikis analizuoti universiteto dėstytojų ir mokslo darbuotojų motyvacines paskatas, už jų esantį mentalitetą, mąstymą ir elgseną. Šiuo tyrimu buvo siekiama išnagrinėti UVB teorines prielaidas, įvairias mokslinės minties mokyklas, požiūrius ir paradigmas ir, remiantis užsienio šalių geraja patirtimi ir praktika, pateikti vadybos sprendimus Lietuvos UVB ekosistemos dalyviams – universitetams, verslo įmonėmis ir viešosios valdžios institucijoms.

Mokslinė problema. Neo-liberalių idėjų sklaida ir jų sąlygota Naujosios viešosios vadybos ir Naujojo viešojo valdymo doktrinų raida pakeitė Lietuvos viešosios politikos ir

vadybos sistemą. Keletas Lietuvos mokslininkų ir tyrėjų nagrinėjo įvairius viešųjų paslaugų teikimo aspektus ir nors buvo atlikta nemažai mokslinių tyrimų vertinant kintantį požiūrį į viešųjų paslaugų teikimą, žinios apie valstybinių universitetų teikiamas viešąsias paslaugas, universitetų bendradarbiavimą su suinteresuotomis šalimis vertės kūrimo tinkluose, žinių ir/ar technologijų perdavimą yra fragmentuotos ir nenuoseklios. Valstybinių universitetų teikiamų paslaugų turinys, jų kokybė, paramos struktūros, finansavimo mechanizmai, valstybės investicijų grąža nesulaukė didelio mokslininkų ir tyrėjų dėmesio. Kai kurie klausimai vis dar lieka neatsakyti. Kaip ir kodėl keitėsi valstybinių universitetų vadyba per pastaruosius porą dešimtmečių? Kokios dominuojančios paradigmos ir doktrinos sąlygoja šiuolaikinių valstybinių universitetų sistemą ir vadybos procesus? Kokia yra užsienio valstybių universitetų bendradarbiavimo su suinteresuotomis šalimis, įskaitant verslo įmones, patirtis ir geroji praktika? Kokiomis viešosios politikos ir vadybos bei verslo vadybos priemonėmis galima paskatinti UVB plėtrą Lietuvoje? Koks konceptualus normatyvinis vadybos modelis paaiškintų ir patobulintų UVB praktiką teikiant optimalią naudą visoms suinteresuotosioms šalims?

Mokslinis tyrimas buvo konstruojamas atsižvelgiant į Naujosios viešosios vadybos ir Naujojo viešojo valdymo doktrinų raidą ir įsigalėjimą, jų sąlygotą perėjimą nuo tradicinio prie korporatyvinio požiūrio į universitetų vadybą, evoliucionuojančių žinių vadybos modelių nuo Trigubos spiralės (angl. *the Triple Helix*) per Keturgubos spiralės (angl. *the Quadruple Helix*) prie Penkiagubos spiralės (angl. *The Quintuple Helix*) modelių raidos kontekste, žinių ir inovacijų bei tinklaveikos vadybos perspektyvą. Teorinis tyrimo pagrindas rėmėsi integraciniu sistemų teorijos (angl. *Systems theory*), institucinės teorijos (angl. *Institutional theory*) ir suinteresuotųjų teorijos (angl. *Stakeholder theory*) požiūriu. UVB fenomenas Lietuvoje nagrinėjamas iš holistinės, integracinės, dinaminės, sisteminės ir procesinės perspektyvų. Pagrindinė disertacinio tyrimo mokslinė problema – vadybos teorijų taikymas siekiant paskatinti Lietuvos UVB praktiką kintant valstybinių universitetų, verslo ir viešosios vadybos doktrinoms.

Ištirtumas. Kadangi valstybinių universitetų ir UVB vadyba siejama su Naujosios viešosios vadybos ir Naujojo viešojo valdymo doktrinų raida, verta paminėti keletą žymiausių šios srities teoretikų. Moksliniai Ch. Hood, Ch. Pollitt, G. Bouckaert, T. Bovaird, E. Lofter, B.G. Peters, T. Gaebler, D. Osborne, D. McNabb darbai sudaro Naujosios viešosios vadybos ir Naujojo viešojo valdymo tyrimų pagrindą. Tai yra dinamiškas procesas, nuolat keičiantis Naujosios viešosios vadybos ir Naujojo viešojo valdymo turinį ir formą, eliminuojant disfunkcijas, dekonstruojant sistemas ir adaptuojant prie šiuolaikinės visuomenės poreikių ir lūkesčių. Viešosios politikos reformomis siekiama padidinti viešųjų paslaugų vertės kūrimo apimtis ir paspartinti procesus, apimančius strateginį valdymą, programinį ir projektinį finansavimą, tarpsektorinę partnerystę, piliečių ir suinteresuotųjų šalių įtraukimą ir pan. Lietuvos mokslininkai A. Raipa, A. Kaziliūnas, S. Puškorius, A. Guogis, D. Gudelis, B. Melnikas, V. Nakrošis, V. Domarkas, T. Sudnickas, V. Smalskys ir kiti nagrinėjo įvairius evoliucionuojančius viešosios vadybos elementus, Naujosios viešosios vadybos ir Naujojo viešojo valdymo sąlygotas sistemas ir procesus, nustatė pagrindinius veiksnius, darančius poveikį viešosios vadybos reformų apimčiai ir veiksmingumui.

Valstybinių universitetų kaip viešųjų paslaugų teikimo vadyba, universitetų sąveika su kitomis suinteresuotomis šalimis, įskaitant viešojo ir privataus sektoriaus instituci-

jas, yra gana naujas reiškinys Lietuvos akademiniame diskurse ir nėra sulaukęs didelio mokslinio intereso. Tarptautinėje akademinėje bendruomenėje šis fenomenas, jo dalyviai, elementai, dinamika, poveikis socialiniams ekonominiams procesams yra plačiai nagrinėti. Pagrindinės pasaulio lygiu pripažintos mokslininkų grupės, nagrinėjančios UVB fenomeną yra siejamos su Stanfordo universitetu (JAV), Masačiuseto technologiniu institutu (JAV), Kolorado universitetu (JAV), Britų Kolumbijos universitetu (Kanada), Londono ekonomikos mokykla (JK), Mančesterio universitetu (JK), Miunsterio taikomųjų mokslų universitetu (Vokietija) ir t. t. Tarptautiniu mastu žymiausi ir labiausiai cituojami UVB teoretikai yra H. Etzkowitz, L. Leydesdorff, D. Audretch, E.P. Berman, H. Nowotny, M. Wright, A. Lockett, P. D'Este, P. Patel, T. Baacken, A. Meerman, T. Davey, N. Fukugawa ir kt.

UVB sąlygojantys veiksniai, jų sąveika UVB ekosistemoje, dominuojančios viešosios vadybos tendencijos sulaukė šiek tiek Lietuvos mokslininkų ir tyrėjų dėmesio. Pavyzdžiui, A. Raipa nagrinėjo tinklaveikos vadybą viešosios vadybos transformacijų struktūroje (Raipa, 2007; Raipa, 2012), viešosios ir privačios partnerystės dimensijų veiksmingumą (Raipa et al, 2008), rizikos vadybą inovacijų vadybos procesuose (Raipa ir Giedraitytė, 2012), teorinius inovacijų aspektus viešojoje vadyboje (Raipa ir Jurkšienė, 2013), organizacijų pasirengimo pokyčiams vadybą (Raipa, 2013). A. Kaziliūnas nagrinėjo kokybės analizės, planavimo ir audito procesus (Kaziliūnas, 2006), kokybės vadybą tvarios organizacinės plėtros kontekste (Kaziliūnas, 2008), žinių vadybos modelio sąsajas su kokybės vadybos programomis (Kaziliūnas, 2011). D. Gudelis analizavo viešosios ir privačios partnerystės fenomeną (Gudelis ir Rozenbergaitė, 2004), viešojo ir privataus sektoriaus sąveikos vadybos modelius (Gudelis, 2012; Gudelis ir Guogis, 2011). B. Melnikas analizavo visuomenės transformacinius procesus žinių ekonomikos, socialinės ir ekonominės plėtros, kultūros, inovacijų, internacionalizacijos ir globalizacijos procesų kontekste (Melnikas, 2011; Melnikas, 2013). B. Mikulskienė nagrinėjo sprendimų priėmimo modelį remiantis suinteresuotųjų įtraukimu į politikos formavimo procesus švietimo ir MTEPI bei sveikatos sektorių srityse (Mikulskienė, 2013). R. Jucevičius tyrinėjo socialinių ir technologinių inovacijų įgalinimo procesus (Jucevičius et al., 2009), žinių tinklus inovacijų kūrimui svarbą, naudą ir motyvus (R. Jucevičius ir V. Kinduris, 2011). A. Augustinaitis nagrinėjo vadybos kryptis žinių visuomenėje ir jų santykį su viešąja vadyba (Augustinaitis, 2003; Augustinaitis, 2004; Augustinaitis, 2005). G. Viliūnas tyrėjo naująją žinių paradigmą ir MTEPI sistemos vadybos transformacijas (Viliūnas, 2006). A. Baležentis tyrinėjo organizacijos inovacinio lauko veiksnius (Baležentis 2007), inovacijų plėtrą Lietuvoje (Baležentis ir Daujotaitė, 2009). A.G. Raišienė ir kiti nagrinėjo Lietuvos organizacijų atvejus iš veiksmingos vadybos perspektyvos (Raišienė et al., 2014). I. Mačerinskienė nagrinėjo verslo įmonių perspektyvą ir intelektinio kapitalo matavimo modelius (Mačerinskienė ir Aleknavičiūtė, 2015), įmonės pridėtinę vertę siejant ją su intelektiniu kapitalu (Mačerinskienė ir Survilaitė, 2011). N. Vasiljevienė tyrinėjo pozityvias iniciatyvas organizaciniams pokyčiams ir transformacijoms (Vasiljevienė ir Tyagi, 2012), etiško ir atsakingo verslo veiklą (Vasiljevienė, 2014).

Pastaruoju metu buvo apginta ir keletas daktaro disertacijų su UVB vadyba susijusiose srityse. Pavyzdžiui, „Socialinė atsakomybė universiteto mokslo vadyboje" (Tauginienė, 2013), „Mokslo ir technologijų parkų konkurencingumo vertinimo modelis" (Leichteris, 2011), „Mokslo žinių ir technologijų perdavimo politika Lietuvoje" (Kiškienė, 2010), „Universiteto mokslo modeliavimas transformacinių procesų kontekste" (Lanskoronskis, 2009).

Mokslinius tyrimus UVB tematika tarptautinėje mokslo erdvėje galima sąlyginai sugrupuoti į dvi pagrindines kategorijas: žinių ir inovacijų vadybos arba tinklaveikos vadybos perspektyvos. Į žinių vadybos kategoriją patenka žinių vadybos proceso tyrimai apimantys žinių identifikavimą, užkodavimą – dekodavimą, sklaidą, vertinimą, pritaikymą ir apsaugą (Probst, 1997; Probst et al., 2006). Keli mokslininkai nagrinėjo žinių generavimo ir intelektinės nuosavybės perdavimo per startuolių ir pumpurinių įmonių procesus (Friedman ir Silberman, 2003; Ndonzuau et al., 2002), patentavimą (Lirry et al., 2005; Wright et al., 2008; Thursby et al., 2007; Lissoni et al., 2008, Fabrizio ir Di Minin, 2008), licencijavimą (Siegel et al., 2003b; Link et al., 2003; Jensen et al., 2003; Thursby ir Kemp, 2002), užsakomuosius mokslinius tyrimus ir sutartis dėl jungtinių tyrimų (Schartinger et al., 2001), bendras tarpsektorines mokslo publikacijas (Friedman ir Silberman, 2003; Thursby ir Kemp, 2002; Hall et al., 2001; D'Este, P. Patel, 2007).

Tinklaveikos vadybos ypatumus iš socialinės – ekonominės perspektyvos nagrinėjo D. Scott, M.E. Newman, R. Agranoff, G. Ahuja, P. Boragatti, M.W. Cohen ir kt. UVB vadyba tinklaveikos vadybos požiūriu nagrinėta iš individualus mokslininko ir/ar tyrėjo perspektyvos (Etzkowitz ir Leydesdorff, 1997; Feldman ir Desrochers, 2003; an Rijnsoever et al., 2008), organizacijų – valstybinių universitetų ir verslo įmonių – vadybos perspektyvos (Santoro ir Chakrabarti, 2002; Knoben, 2008; Giuliani ir Arza, 2009; Berman, 2012), ir/ar viešosios vadybos perspektyvos (Barzelay, 1992; Agranoff ir McGuire, 2003; Sorensen ir Torfing, 2007; Boardman, 2008; McNabb, 2009; Koliba et al., 2011). Pagrindinės veiksnių kategorijos, sąlygojančios individualaus mokslininko ir/ar tyrėjo įsitraukimą į UVB yra demografiniai bruožai (lytis, amžius), išsilavinimas (įgytas mokslo laipsnis, kvalifikacija, gebėjimai ir t.t.), pozicija akademinėje bendruomenėje (akademinis statusas, mokslo rezultatai, patirtis ir t.t.) (Agrawal ir Henderson, 2002; Bercovitz ir Feldman, 2008; Friedman ir Silberman, 2003; Di Gregorio ir Shane, 2003; Lirry et al., 2005; Santoro ir Chakrabarti, 2002; Schartinger et al., 2001; Audretch ir Erdem, 2004). Organizacinio lygmens veiksniai, turintys įtakos UVB vadybai, yra geografinė universiteto ir verslo įmonių vieta, MTEPI ir studijų procesų kokybė, veiklos vertinimas ir finansavimas, žinių ir/ar technologijų perdavimo sistemos, organizacinė kultūra (O'Shea et al., 2005; Lockett et al., 2003; Lockett ir Wright, 2004; Lirry et al., 2006). Viešosios vadybos požiūriu UVB vadyba nagrinėta atsižvelgiant į Naujosios viešosios vadybos ir Naujojo viešojo valdymo doktrinų raidą ir perėjimą nuo tradicinio prie korporatyvinio požiūrio į valstybinių universitetų vadybą (Nowotny et al., 2001), UVB paramos struktūrų perspektyvą (Agranoff ir McGuire, 2003; Sorensen ir Torfing, 2007; McNabb 2009; Berman, 2012).

Ginamieji teiginiai.

1. UVB vadybos teorinės prielaidos turi būti nagrinėjamos atsižvelgiant į Naujojo viešojo valdymo ir Naujosios viešosios vadybos doktrinas, perėjimą nuo tradicinio prie korporatyvinio požiūrio ir žinių kūrimo bei vadybos modelius – Trigubos spiralės, Keturgubos spiralės ir Penkiagubos spiralės, nes jos atspindi visuomenės vertybių ir metaliteto kaitą.
2. Atskirtį tarp universiteto ir verslo Lietuvoje sąlygoja silpnos UVB tradicijos, strateginio mąstymo ir jo komunikavimo stoka, lyderystės ir konsoliduojančios institucijos nacionaliniu lygiu nebuvimas, bendradarbiavimo ir verslumo kultūros nepakankamumas.
3. Tinklaveikos, žinių ir inovacijų vadybos požiūris yra sėkmingos UVB vadybos sąlyga.

Disertacijos tyrimo objektas – universitetų ir verslo bendradarbiavimo valdymas Lietuvoje.

Disertacijos tyrimo tikslas – išnagrinėti universitetų ir verslo bendradarbiavimo fenomeną ir, remiantis tarptautine patirtimi ir gerąja praktika sukurti Lietuvos kontekstui pritaikytą normatyvinį UVB valdymo modelį.

Disertacijos tyrimo uždaviniai:

1. Išnagrinėti UVB teorines prielaidas.
2. Išanalizuoti Šiaurės Amerikos ir Europos valstybių UVB valdymo gerąją praktiką.
3. Atlikti Lietuvos UVB atvejo analizę.
4. Sukurti Lietuvos kontekstui pritaikytą normatyvinį UVB valdymo modelį.

Metodologija. Disertacinis tyrimas remiasi multi-metodologiniu pagrindimu, taikant indukcines ir konstruktyvizmo strategijas. Holistinis požiūris į UVB valdymą remiasi sudėtinga socialinių, teisinių ir politinių santykių ir suinteresuotųjų šalių sąveika (Berg 2007). Tyrime buvo taikoma fenomenologinė socialinio pažinimo strategija analizuojant UVB fenomeną, keliant fundamentinius klausimus apie Lietuvos UVB ekosistemos dalyvių patirties esmę, prasmę ir struktūrą (Patton 2002). Moksliniame tyrime remtasi fenomenologine prielaida, kad pasaulis yra sukonstruotas taip, kaip žmonės jį supranta (Patton 2002) ir vienintelis būdas pažinti kito žmogaus patirtį yra patiems kiek galima artimiau patirti nagrinėjamą fenomeną (Patton 2002).

Moksliniame tyrime taikyta heuristinė analizė, sutelkianti dėmesį į tyrėjo asmeninę patirtį ir įžvalgas. Tyrimo strategija buvo siekiama sujungti tyrimo dalyvių patirtį, koncentruojantis ne į matavimą, bet į prasmę, ne į išorę, bet į esmę, ne į kiekybę, bet į kokybę, ne į elgseną, bet į patirtį (Patton 2002). Heuristinės analizės strategija rėmėsi požiūriu, kad atradimas kyla iš tiesioginio tyrėjo kontakto su tyrimo objektu ir bet kokia tyrėjo surinkta informacija potencialiai gali būti panaudota atsakant į tyrimo klausimą arba išspręsti sprendžiant problemą. Tyrimas apėmė penkerių metų laikotarpio UVB ekosistemos dalyvių mąstymo ir veiklos raidos stebėjimą dalyvaujant įvairiose darbo grupėse, renginiuose ir mokymuose, dokumentų analizę, formalius interviu ir neformalius pokalbius (Berg 2007).

Tyrimo strategijai buvo pasirinkta veiklos tyrimo (angl. *action research*) ir lauko tyrimo (angl. *fieldwork*) elementų integracija, nes ši sinergija leido suderinti esamą, mokslo vadybos, ir ankstesnę, verslo vadybos, darbinę patirtį. Veiksmo ir lauko tyrimų metodais buvo siekiama rasti sprendimus, kaip patobulinti UVB ekosistemos dalyvių sąveiką, o pagrindinė užduotis buvo dirbti kartu ir šalia tiriamos žmonių grupės ir/ar bendruomenės, būti jos dalimi, o ne objektyvia stebėtoja ar konsultante (Berg 2007). Lauko tyrimas reikalavo intensyvaus ir ilgalaikio UVB ekosistemos dalyvių elgsenos stebėjimo, girdėjimo ir refleksijos (Patton 2002).

Disertacinio tyrimo etapai: 1) pagrindinio mokslinio tyrimo klausimo nustatymas, 2) informacijos ir duomenų rinkimas siekiant atsakyti į šį klausimą panaudojant tokius metodus kaip mokslinės literatūros analizė, dokumentų analizė, lyginamoji analizė, atvejo analizė, pusiau struktūruotas giluminis ekspertų interviu 3) informacijos ir duomenų analizė 4) sprendimų pasiūlymas atsakant į 1 etape nustatytą klausimą (Berg 2007).

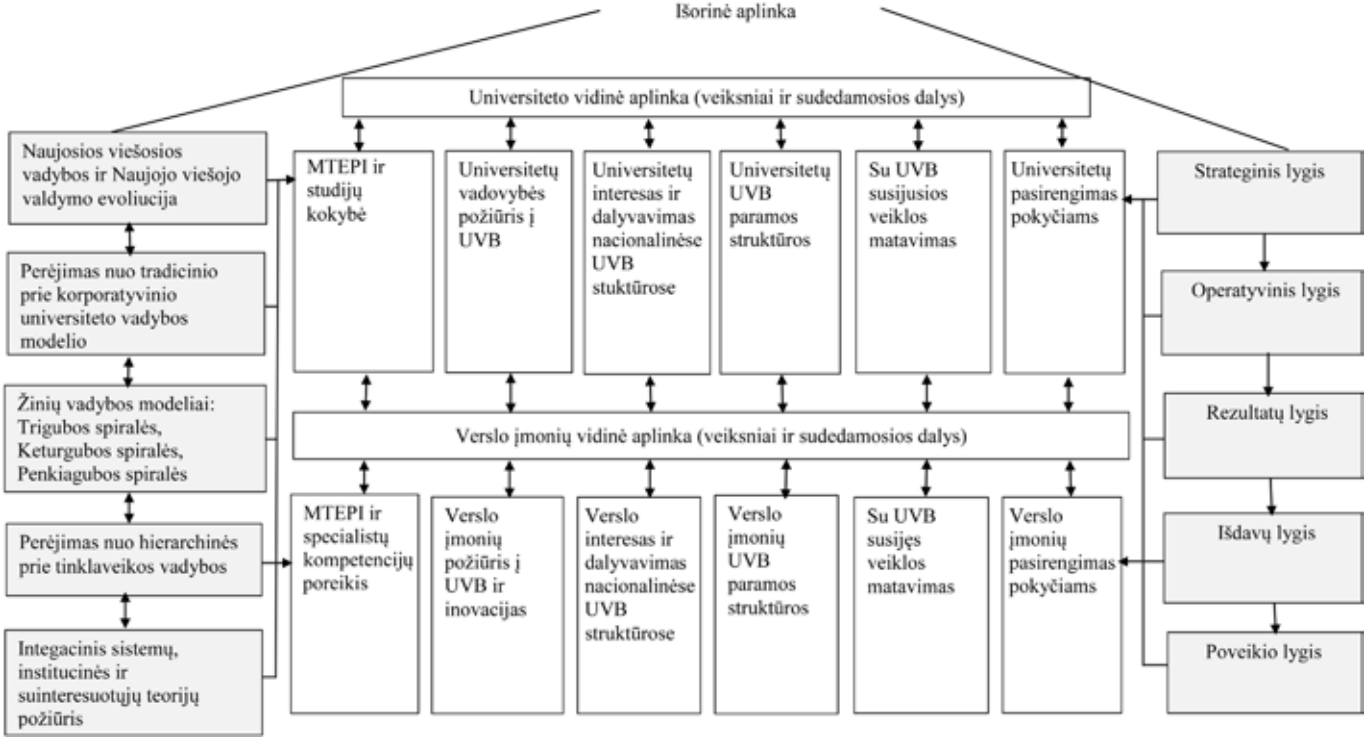
Mokslinį tyrimą sudarė teorinė meta-analizė ir empirinis tyrimas. Teorinę ir meta-analizę sudarė sisteminė ir lyginamoji mokslinės literatūros šaltinių analizė. Empirinis tyrimas buvo atliekamas taikant trianguliacijos principą ir integruojant įvairius kokybinių tyrimų metodus: dokumentų analizę, lyginamąją analizę, pusiau struktūruotus giluminius ekspertų interviu.

Pasirinktas kokybinis atvejo analizės metodas leido ištirti kontekstą, UVB fenomeno sistemą ir procesus, kurių reikia siekiant suprasti tyrimo objekto ryšius bei pasikartojančius veiksmus (Patton 2002). Šis metodas leido atskleisti svarbius sąveikos veiksnius, būdingus Lietuvos UVB ekosistemos valdymui. Kokybinis atvejo analizės metodas leido pastebėti pasikartojančius veiksmus ir užslėptus elementus, kurie liktų nepastebimi taikant kitus tyrimo metodus (Berg 2007). Kokybinio atvejo analizės tikslas buvo išanalizuoti ir aprašyti tyrinėjamo objekto visumą ir detales, kontekstą ir gylį (Patton 2002). Aiškinamasis ir vidinis giluminis atvejo analizės metodas buvo pasirinktas, nes jis taikomas analizuojant sudėtingas organizacijų ir bendruomenių sąveikas, kaip UVB ekosistemos atveju. Be to, siekiant suprasti ir išsamiai išnagrinėti UVB sistemą, sąveikas ir santykius tarp įvairių jos elementų, jų poveikį vienas kitam bei UVB kūrimo ir palaikymo procesą, buvo pasirinktas sisteminės-procesinės analizės metodas. Taip pat buvo vadovaujamasi tvarios plėtros prielaida siekiant užtikrinti, kad disertacinio tyrimo metu sukurtas konceptualusis normatyvinis UVB vadybos modelis būtų maksimaliai naudingas visiems suinteresuotiesiems.

Kadangi UVB ekosistemos dalyviai sukuria daug dokumentuotos informacijos apie universitetų, verslo įmonių ir viešosios vadybos veiklą, empiriniam tyrimui buvo pasirinktas dokumentų analizės metodas. Buvo nagrinėjami valstybės ir universitetų strateginiai dokumentai, statutai, misijos ir vizijos formuluotės (Patton 2002). Dokumentų analize buvo siekiama ištirti ir palyginti oficialius teiginius, sutinkamus nacionaliniuose ir instituciniuose dokumentuose, kurie suteikė daug išsamios ir naudingos informacijos apie su UVB susijusias strategijas, tikslus, priemones ir sprendimus. Dokumentų analizės metodas leido įvertinti UVB *status quo* ir numatyti ateities tendencijas.

Remiantis prielaida, kad verta žinoti UVB ekosistemos dalyvių požiūrį, vertinimą ir nuomonę empiriniam tyrimui taip pat buvo pasirinktas giluminis pusiau struktūruotas ekspertų interviu metodas. Jis leido pažvelgti į UVB iš informantų perspektyvos ir suprasti realybę taip, kaip ją suvokia UVB ekosistemos dalyviai. Interviu metodas taip pat buvo stebėjimas, suteikiantis galimybę ne tik girdėti, ką informantas kalba, bet ir kaip jis kalba. Šio metodo dėka buvo gauta informacijos net tik iš verbalinių atsakymų, bet ir iš emocinės informantų reakcijos (Patton 2002). Informantai buvo pasirinkti pagal jų intelektinį ir patirties UVB srityje lygį, atstovavo universitetus ir įvairius verslo sektorius, universitetus ir verslą vienijančias asociacijas.

Kuriant konceptualųjį normatyvinį UVB vadybos modelį buvo pritaikytas paprasto modeliavimo ir loginio konstravimo metodas. Modelio sukūrimą sudarė du etapai: 1) prioritetų nustatymas remiantis tomis sritimis, kur glūdi UVB potencialas ir/arba kuriose yra tobulinimo poreikis 2) modelio konstravimas ir aprašymo procesas. Konceptualusis normatyvinis Lietuvos kontekstui pritaikytas UVB vadybos modelis pateikiamas šioje schemoje.



Paveikslas. Konceptualusis normatyvinis universitetų ir verslo bendradarbiavimo valdymo Lietuvoje modelis
(*Šaltinis:* sukurta autorės)

Išvados

Disertacinio darbo išvados paremtos atsakymais į pagrindinį mokslinio tyrimo klausimą: „kokių vadybos teorijų taikymas gali paskatinti universitetų ir verslo bendradarbiavimą besikeičiančių universitetų, verslo ir viešosios vadybos doktrinų sąlygomis?“ Disertacija papildo mokslines paieškas ir žinių kūrimo procesus taikant unikalią metodologiją, nagrinėjant UVB valdymos teoriją ir praktiką įvairiose šalyse, analizuojant Lietuvos UVB atvejį ir sukūrus konceptualųjį normatyvinį Lietuvos valstybinių universitetų ir verslo bendradarbiavimo modelį. Remiantis teorine meta-analize ir empirinio tyrimo rezultatais buvo padarytos šios išvados:

Universitetų ir verslo bendradarbiavimo valdymo teorinės prielaidos

1. Teorinis UVB valdymo prielaidos gali būti nagrinėjamos atsižvelgiant į Naujosios viešosios vadybos ir Naujojo viešojo valdymo doktrinos raidą. Šių doktrinų dėka atsirado korporatyvinis požiūris į universitetų valdymą siekiant modernizuoti ir optimizuoti valstybinių universitetų teikiamas viešąsias paslaugas. Universitetuose atsirado menedžerizmo kultūra, skatinanti ekonomiškumo, veiksmingumo ir efektyvumo principus. D. Osborne ir T. Gaebler pasiūlyti Naujosios viešosios vadybos bei S.P. Osborne – Naujojo viešojo valdymo doktrinos ypatumai gali būti taikomi ir universitetų kaip viešųjų paslaugų teikėjų kontekste. Dėl šių doktrinų universitetas įgyja tokius bruožus kaip bendradarbiaujantis universitetas, katalizuojantis universitetas, bendruomenės universitetas, konkurencingas universitetas, misiją įgyvendinantis universitetas, į rezultatus orientuotas universitetas, klientų poreikius ir lūkesčius tenkinantis universitetas, verslus universitetas.

2. UVB valdymo teorinės prielaidos taip pat gali būti nagrinėjamos remiantis universitetų valdymo transformacija nuo tradicinio prie korporatyvinio valdymo. Paaiškintas verslo vadybos kultūros universitete atsiradimas ir jo sąlygotos reformos pereinant nuo elitinio prie masinio aukštojo mokslo, nuo fundamentinių prie taikomųjų mokslinių tyrimų, nuo bazinio prie konkursinio universiteto finansavimo modelio. Dėl šio požiūrio įsigalėjimo universitetuose diegiami verslo vadybos bruožai: strateginis valdymas, efektyvus išteklių panaudojimas, rinkodara ir pan.

3. UVB valdymas gali būti nagrinėjamas iš Trigubos spiralės, Keturgubos spiralės ir Penkiagubos spiralės žinių vadybos modelių raidos perspektyvos. Trigubos spiralės modelis reiškia trijų dimensijų universitetų, verslo ir viešosios vadybos perspektyvą į inovacijų kūrimą ir socialinę-ekonominę plėtrą ir yra perėjimo iš industrinės į žinių ekonomiką varomoji jėga. UVB vadyba taip pat buvo nagrinėta Keturgubos spiralės, papildančios Trigubos spiralės modelį kultūra, medijomis ir menu paremta plačiąja visuomene. UVB valdymas Penkiagubos spiralės žinių vadybos modelio, papildančio Keturgubos spiralės modelį „natūralia visuomenės aplinka“, kontekste įgyja tvarios visuomenės plėtros elementus.

4. UVB valdymas taip pat gali būti nagrinėjamas integruojant sistemų, institucinę ir suinteresuotųjų teorijas. Sistemų teorija gali būti pritaikyta nagrinėjant sąveiką tarp universitetų ir verslo ekosistemos dalyvių ir atsakant į klausimą, kaip ir kodėl ši ekosistema veikia. Nagrinėjant UVB valdymą buvo pritaikyti penki sistemų vadybos komponentai įskaitant aplinką, įeigą, transformacinį procesą, išeigą ir grįžtamąjį ryšį. Institucinė teorija buvo pritaikyta nagrinėjant UVB valdymą iš izomorfinės, institucinės logikos ir institucinio darbo perspektyvų. Ši teorija buvo taikyta siekiant paaiškinti esamą UVB valdymo

situaciją iš konfliktuojančios institucinės logikos perspektyvos remiantis iš tarybinių laikų paveldėtu mentalitetu bei neigiamu požiūriu į privatų verslą ir viešojo valdymo pastangomis keisti UVB dinamiką remiantis UVB iniciatyvomis, kylančiomis iš Europos Sąjungos ir Šiaurės Amerikos.

5. UVB bendradarbiavimo valdymas taip pat buvo nagrinėtas iš tinklaveiklos, žinių ir inovacijų vadybos perspektyvų. Tinklaveikos vadybos perspektyva padėjo atsakyti į klausimą, kaip universitetams ir verslo įmonėms organizuoti savo veiklas siekiant abipusės naudos. Remiantis šiuo požiūriu taip pat buvo pasiūlyti mechanizmai, kurie padeda nustatyti prioritetus, priimti sprendimus ir telkti lėšas. Buvo nustatytos UVB skatinančio viešosios vadybos priemonės, išnagrinėti individualių mokslininkų ir tyrėjų, universitetų ir jų padalinių, verslo ir viešosios vadybos organizacijų sistemos bruožai ir dinaminiai procesai. Žinių ir inovacijų vadybos perspektyva buvo pritaikyta nagrinėjant iš UVB kylančius žinių generavimo, kaupimo, perdavimo, taikymo ir matavimo procesus.

Europos ir Šiaurės Amerikos valstybių patirtis ir geroji praktika

Remiantis mokslinės literatūros analize, tarptautinių organizacijų ataskaitomis ir inovacijų reitingais išanalizuotas tarptautinis UVB kontekstas, Europos ir Šiaurės Amerikos valstybių patirtis ir geroji praktika.

1. Išnagrinėta anglo-saksiškų valstybių UVB viešosios vadybos situacija, universitetų ir verslo bendradarbiavimo paramos struktūros Jungtinėje Karalystėje, Airijoje, Jungtinėse Amerikos Valstijose ir Kanadoje. Padaryta išvada, kad anglo-saksiškos valstybės yra UVB lyderės, turinčios puikiai išvystytą viešosios vadybos sistemą, paskirstytas atsakomybes ir paramos sistemas. Didžiausias dėmesys skiriamas žinių ir technologijų perdavimui plataus spektro inovacijų ekosistemoje, kuri sujungia švietimo politiką su kitomis socialinėmis ir ekonominėmis sritimis. UVB paramos sistema yra nuosekli ir efektyviai koordinuojama, palankus kultūrinis klimatas sąlygoja įgyvendinamą inovacijų strategiją.

2. Vokiškai kalbančios valstybės tęsia stiprią UVB valdymo tradiciją. Jos turi puikiai išvystytą UVB viešosios vadybos sistemą, padalintas atsakomybes ir paramos sistemas. UVB yra projektinių lėšų skirstymo schemų išankstinė sąlyga. Pastaruoju metu didžiausias dėmesys skiriamas žinių ir technologijų perdavimui, ypač taikomųjų mokslų universitetams, vadovaujamasi plataus spektro inovacijų sistema, siejančia švietimo politiką su kitomis socialinėmis ir ekonominėmis sferomis. Viešųjų paslaugų teikimo sistema yra nuosekli ir efektyviai koordinuojama, kultūrinis klimatas sąlygoja ne imitaciją, o radikalią ir įgyvendinamą inovacijų strategiją.

3. Frankofoniškos ir Beneliukso valstybės plėtoja UVB tradiciją ir yra laikomos inovacijų pasekėjomis. Iš UVB kylančias inovacijas skatina kelios agentūros, kurios sudaro tvarią viešojo ir privataus sektoriaus partnerystę įskaitant universitetų atliekamus mokslinius tyrimus ir žinių ir /ar technologijų perdavimą. Frankofoniškose ir Beneliukso valstybėse UVB viešoji vadyba yra deleguota regionams. Nors tradiciškai daugiausia dėmesio ir lėšų buvo skiriama technologinėms inovacijoms, susijusioms su MTEPI rezultatų komercializavimu, pastaruoju metu pereinama ir prie socialinių inovacijų finansavimo. Nacionaliniai strateginiai dokumentai pabrėžia ilgalaikes perspektyvas ir UVB įveikiant visuomenės iššūkius.

4. Skandinavijos valstybės puoselėja pragmatišku požiūriu paremtas UVB tradicijas ir yra laikomos inovacijų lyderėmis Europoje. Lyderio pozicijas skatina universitetų įgalini-

mas suteikiant jiems teisę į išradimų intelektinę nuosavybę. Platus geografinis universitetų tinklas turi regioninius padalinius, įvairias inovacijų platformas ir inkubatorius. Inovacijos remiasi nacionaliniu mentalitetu, kad UVB yra būtina sąlyga įgyvendinant universiteto misiją, keliant absolventų gebėjimus, kuriant pridėtinę vertę vietos pramonei, sukuriant darbo vietas ir disponuojamas pajamas. Pragmatiškas požiūris į UVB yra paremtas puikiai funkcionuojančia inovacijų aplinka ir nacionaliniais prioritetais įtraukiant verslumo dedamąją į švietimo sistemą ir sudarant puikias darbo sąlygas mokslininkams ir tyrėjams.

5. Pietų Europos valstybės turi vidutiniškai išvystytą UVB tradiciją. Nors šiose valstybėse UVB tradicijos nėra ilgos, MTEPI vadyboje dominuoja viešasis sektorius. Jis pasižymi aukštu centralizavimo laipsniu, o pastaruoju metu buvo išvystyta UVB skatinanti viešoji politika. Nacionalinės ir regioninės strategijos numato nacionalinius MTEPI ir inovacijų prioritetus, paskiriamos už universitetų ir verslo bendradarbiavimą atsakingos institucijos, kuriamos paramos sistemos.

6. Centrinės ir Rytų Europos šalys kuria UVB tradiciją. Jos yra laikomos vidutiniškai išplėtotų inovacijų šalimis, kuriose inovacijų veikla vertinama žemiau ES vidurkio. Trūksta politinės valios ir kultūrinės orientacijos į UVB, MTEPI sistemose vis dar dominuoja viešieji finansai ir centrinė vadyba. Be to, skiriasi UVB ekosistemos dalyvių motyvacija ir vertybių sistema, universitetai turi ribotus gebėjimus įsisavinti mokslinių tyrimų rezultatus, o vidinė universitetų biurokratija yra pagrindinė UVB kliūtis. Vis dėlto, siekiant perorientuoti ekonomiką link UVB ir žinioms imlaus verslo, ES struktūrinių ir investicinių fondų parama yra skirta UVB, o tai žada geras UVB perspektyvas Centrinėje ir Rytų Europoje.

Lietuvos universitetų ir verslo bendradarbiavimo atvejo analizė

1. Lietuva kartu su kitomis Centrinės ir Rytų Europos valstybėmis yra laikoma vidutiniškai inovacijas kuriančia valstybe ir turi specifinį UVB kontekstą. Atkūrus Nepriklausomybę UVB aplinka pamažu keitėsi šaliai perėjus nuo socialistinės prie rinkos ekonomikos, nors aukštasis mokslas buvo nereformuotas, o UVB nepatekdavo į akademinį ir viešąjį diskursą. Proveržis įvyko, kai Vyriausybė priėmė sprendimą iki 10% visų 2007–2013 Struktūrinių ir investicinių fondų lėšų skirti MTEP. Buvo sukurtos UVB skatinančios sistemos, tokios kaip slėniai, klasteriai, mokslo ir technologijų parkai, į juos investuota didelė valstybės ir 2007–2013 Struktūrinių ir investicinių fondų lėšų dalis. 2010 m. Vyriausybė paskatino UVB plėtrą patvirtindama Lietuvos inovacijų strategiją 2010–2020 m., įkurdama Mokslo, technologijų ir inovacijų agentūrą ir skirdama lėšų tarpsektoriniu bendradarbiavimu paremtiems projektams.

2. Remiantis sistemų teorija buvo identifikuoti Lietuvos UVB ekosistemos ryšiai, sąveika ir konfigūracija. Lietuva turi keletą puikių UVB gerosios praktikos pavyzdžių tokiose srityje kaip biotechnologijos, lazerių, chemijos pramonė. UVB ekosistema yra paremta binarine ministerijų valdymo sistema, už universitetų veiklą yra atsakinga Švietimo ir mokslo ministerija, o už verslo skatinimą – Ūkio ministerija. Organizacinę viešosios vadybos struktūrą sudaro viešojo valdymo institucijos, kurių veikla yra susijusi su UVB ir inovacijų plėtra, apibrėžtos ir išanalizuotos daugumos jų funkcijos. Išnagrinėta Lietuvos UVB reglamentuojanti teisinė bazė ir padaryta išvada, kad Lietuva turi puikiai išvystytą teisinę bazę. Lietuvoje yra vidutiniškai išvystyta UVB paramos struktūra. Tarp strateginio

ir operatyvinio, deklaratyvaus ir įgyvendinimo lygmens nacionaliniu ir instituciniu mastu yra didelis atotrūkis.

3. Institucinė teorija buvo pritaikyta siekiant identifikuoti dominuojančius Lietuvos UVB bruožus ir juos paaiškinti iš prieštaraujančios institucinės logikos perspektyvos. Buvo padaryta išvada, kad Lietuvoje trūksta kultūrinės orientacijos ir įsipareigojimo UVB. Tai gali būti paaiškinama kognityviniu paradoksu, kurį sąlygoja vyraujančio požiūrio transformacija per dvidešimt Nepriklausomybės metų. Lietuvoje vis dar gajus iš tarybinių laikų paveldėtas neigiamas požiūris į privatų verslą ir verslumą, kuris ypač ryškus akademinėje bendruomenėje. Kita vertus, Lietuvos visuomenę veikia iš Vakarų Europos ir Šiaurės Amerikos valstybių kylantis verslumo mentalitetas ir UVB skatinanti Europos Sąjungos viešoji politika ir Lietuvos įsipareigojimai Europos Sąjungai. Suinteresuotųjų teorija buvo pritaikyta siekiant nustatyti struktūrinius, tarpusavio santykių ir edukacinius Lietuvos UVB veiksnius, apimančius acionalines ir institucines ilgalaikes strategijas, misijos ir vizijos formuluotes, UVB paramos priemones.

4. Empirinio tyrimo rezultatai parodė struktūrinio lygmens Lietuvos UVB trūkumus. Trūksta struktūrinio valdymo bei jo komunikacijos visais viešojo ir privataus sektoriaus vadybos lygiais. Lietuvos UVB ekosistemoje nėra aiškaus lyderio, kuris galėtų konsoliduoti ir prisiimti atsakomybę už ekosistemos dalyvių sąveiką. Nacionaliniu ir instituciniu lygiu nėra motyvacinės sistemos, įgalinančios universitetų dėstytojus ir mokslo darbuotojus dalyvauti į rezultatus orientuotose UVB veiklose. Nacionalinė ir institucinė UVB vadybos sistema turi būti sufokusuota į galutinį tikslą, o ne į procedūras jam pasiekti. Empirinio tyrimo rezultatai taip pat parodė tarpusavio santykių veiksnius, kurie stabdo Lietuvos UVB plėtrą. Universitetų ir verslo sektoriaus darbuotojai stokoja gilaus supratimo apie kito sektoriaus misiją ir svarbą visuomenei ir „kalba skirtingomis kalbomis". Todėl, yra didelis „vertėjų" arba žmonių, suprantančių universitetų ir verslo sektoriaus vertybes ir svarbą visuomenei bei funkcionavimo principus, kompetencijų poreikis. Be to, UVB yra paremtas tarpasmeniniais santykiais, todėl pasitikėjimas ir tarpusavio supratimas yra pagrindinės UVB prielaidos. Empirinio tyrimo rezultatai taip pat parodė, kad švietimo sistemos misija turi būti ne tik suteikti žinias, bet ir puoselėti bendradarbiavimo ir verslumo kultūrą Lietuvos visuomenėje. Turi būti sukurtos mokymosi visą gyvenimą struktūros, įgalinančios žmones kūrybiškai mąstyti, integruoti įvairių disciplinų ir sektorių perspektyvas, dirbti komandose ir žinoti esminius universitetų ir verslo veiklos principus. Bendradarbiavimo ir verslumo kultūra turi būti puoselėjama visuose visuomenės pažangą skatinančiose srityse.

Konceptualusis normatyvinis Lietuvos universitetų ir verslo bendradarbiavimo modelis

1. Remiantis teorinio ir empirinio tyrimo rezultatais ir taikant paprastojo modeliavimo ir loginio konstravimo metodą buvo sukurtas konceptualus normatyvinis Lietuvos UVB modelis. Modelio kūrimas apėmė du etapus: 1) prioritetų nustatymas remiantis teorinio ir empirinio tyrimo rezultatais atsižvelgiant į pagrindines UVB potencialą ir/arba tobulintinas sritis, 2) konceptualaus normatyvinio Lietuvos UVB valdymo modelio konstravimas.

2. Konceptualus normatyvinis UVB valdymo modelis buvo sukurtas remiantis prielaida, kad glaudūs tarpusavio santykiai tarp universitetų ir verslo įmonių yra išankstinė verslo ir valstybės konkurencinės pozicijos sąlyga. UVB taip pat svarbus įveikiant šiuolaikinės

visuomenės iššūkius, įgyvendinant trigubą universiteto misiją, kuriant pridėtinę vertę vietos pramonei, kuriant darbo vietas ir disponuojamas pajamas. Todėl remiantis žinių ir tinklaveiklos vadybos perspektyva turi būti sukurta palanki vidinė ir išorinė valstybės ir institucinė aplinka. Universitetų, verslo įmonių ir viešosios vadybos sinergija, sukurta remiantis formaliais ir neformaliais santykiais, turėtų sudaryti sąlygas UVB, inovacijų ir verslumo kultūros Lietuvoje plėtrai.

3. Konceptualųjį normatyvinį UVB modelį sudaro dviejų pagrindinių UVB ekosistemos veikėjų – universitetų ir verslo įmonių – išorinė ir vidinė aplinka. Išorinę UVB aplinką sudaro tarptautinis ir nacionalinis kontekstas. Išoriniai veiksniai apima pastarųjų dešimtmečių universitetų, verslo ir viešosios vadybos pokyčius tarptautiniu ir nacionaliniu lygiu, didėjantis MTEPI ir studijų procesų tarptautiškumas, mokslinė ir kultūrinė migracija, multi-kultūralizmas, palanki tarptautinė geo-politinė aplinka, UVB iniciatyvos ir geroji praktika tarptautiniu ir nacionaliniu lygiu. Nacionalinę UVB aplinką taip pat sudaro socialiniai, ekonominiai ir kultūriniai aspektai, tokie kaip UVB tradicijos ir už jų esantis mentalitetas, teisė, politinė sistema, nacionalinis MTEPI, verslo ir inovacijų kontekstas, Lietuvoje veikiančios universitetus ir verslo įmones vienijančios asociacijos, bendruomenės, nevyriausybinės organizacijos.

4. Universitetų vidinę aplinką sudarantys UVB veiksniai ir dedamosios dalys apima šešias pagrindines kategorijas: MTEPI ir studijų kokybė, universitetų vadovybės požiūris į UVB ir inovacijas, universitetų interesai ir dalyvavimas nacionalinėse ir tarptautinėse UVB paramos struktūrose, vidinės universitetų UVB paramos struktūros, su UVB susijusi veiklos matavimo sistema ir universitetų pasirengimas pokyčiams.

5. Verslo įmonių vidinę aplinką sudarantys UVB veiksniai ir dedamosios dalys apima taip pat šešias pagrindines kategorijas: MTEPI veiklų ir specialistų poreikio nustatymas, verslo įmonės vadovybės požiūris į UVB ir inovacijas, verslo interesai ir dalyvavimas nacionalinėse ir tarptautinėse UVB paramos struktūrose, verslo įmonių vidinės UVB paramos struktūros, su UVB susijusi veiklos matavimo sistema ir universitetų pasirengimas pokyčiams.

6. Konceptualaus normatyvinio UVB vadybos modelio sukūrimas taip pat apima Naujosios viešosios vadybos ir Naujojo viešojo valdymo evoliuciją, jų sąlygotą perėjimą nuo tradicinio prie korporatyvinio universitetų vadybos modelio, žinių vadybos modelių raidą nuo Trigubos spiralės per Keturgubos spiralės į Penkiagubos spiralės modelį ir poveikį UVB vadybai. Šis modelis taip pat apima transformaciją nuo hierarchinės prie tinklaveikos vadybos ir integracinę sistemų, institucinės ir suinteresuotųjų teorijų perspektyvą.

7. Konceptualaus normatyvinio UVB valdymo modelio dizainas taip pat apima strateginį, operatyvinį, rezultatų, išdavų ir poveikio lygius. Šie lygiai yra integruoti į vidinę ir išorinę UVB vadybos modelio aplinką. Universitetų ir verslo įmonių vidinė aplinka taip pat yra tiesiogiai susijusi su šiais lygiais. Strateginis lygis apima strateginius dokumentuotus planus nacionaliniu ir instituciniu mastu, įtraukiant visas suinteresuotąsias UVB ekosistemos šalis, kuriant UVB paramos struktūras ir sistemas, skiriant resursus UVB per viešosios politikos institucijas. Operatyvinis lygmuo apima UVB veiklas įskaitant žmogiškųjų, infrastruktūros, finansinių išteklių sistemas. Rezultatų lygmuo apima rezultatus, gautus iš UVB veiklų. Išdavų lygmuo apima UVB sąlygoja indėlį į universitetų studijų programų, MTEPI procesų plėtrą, verslo įmonių pelno maržos didėjimą. Poveikio lygmuo

apima indėlį į socialinius-ekonominius procesus ir regionų plėtrą. Konceptualaus normatyvinio UVB schema pateikiama žemiau.

Mokslinis naujumas. UVB fenomenas nagrinėtas atsižvelgiant į Naujosios viešosios vadybos ir Naujojo viešojo valdymo doktrinų raidą ir jų sąlygotą perėjimą nuo tradicinio prie korporatyvinio požiūrio į valstybinių universitetų valdymą, sistemų teorijos, institucinės teorijos ir suinteresuotųjų teorijos elementų sinergiją, šiuolaikines UVB valdymo tendencijas. Tyrime panaudota unikali ir novatoriška metodologija. Sukurtas unikalus ir novatoriškas konceptualusis normatyvinis Lietuvos UVB vadybos modelis. Tarptautinė UVB vadybos mokslinė bazė papildyta teorija, Lietuvos patirtimi ir praktika. Mokslinio tyrimo dėka buvo nustatytos Lietuvos UVB vadybos problemos, pateikti siūlymai, kaip jas spręsti, apibrėžtos tolimesnės UVB plėtros kryptys. Tyrimo rezultatai gali būti naudojami tolimesniuose mokslo tyrimuose, formalaus ir neformalaus mokymosi procesuose.

Praktinė darbo reikšmė gali būti vertinami iš valstybinių universitetų, verslo įmonių ir viešosios vadybos perspektyvos. Mokslinio tyrimo rezultatai gali turėti poveikį mokslininkų, tyrėjų, verslo įmonių darbuotojų elgsenos pokyčiui (UVB ekosistemos dalyviai taps jautresni UVB, vadovybė supras UVB motyvacinių paskatų sistemų būtinybę ir pan.). Instituciniu lygiu mokslinio tyrimo rezultatai gali pakeisti požiūrį į UVB, įtraukti UVB į universiteto ir verslo įmonių strategijas, ilgalaikius ir trumpalaikius veiksmų planus ir jų įgyvendinimo priemones. Žmogiškųjų išteklių, infrastruktūros, finansų vadyba gali būti modernizuota per UVB valdymo politiką, praktiką ir procesus. Mokslinio tyrimo rezultatai gali būti naudojami plėtojant ir įgyvendinant nacionalines UVB strategijas, ilgalaikius ir trumpalaikius veiksmų planus ir jų įgyvendinimo priemones. Disertacijos įžvalgos ir rekomendacijos gali būti naudojamos universiteto studijų ir MTEPI veiklų vertinimui, Lietuvos universitetų, jų padalinių ir individualių mokslininkų bei tyrėjų veiklos vertinimui.

Rekomendacijos universiteto vadovybei

1. UVB valdymas turi būti įtrauktas į strateginius ir operatyvinius, ilgalaikius ir trumpalaikius universiteto valdymo dokumentus (statutą, strategiją, metinį veiksmų planą ir pan.) ir plačiai komunikuojama visai organizacijai (per internetą, intranetą, el. paštą, naujienlaiškį, pasisakymus žodžiu ir pan.) pozityviu ir galimybes nurodančiu būdu (per gerąją praktiką, sėkmės atvejus ir pan.). Ši rekomendacija taikoma visiems valstybinių universitetų strateginio lygmens vadovams (rektorato, senato, tarybos nariams ir pan.) ir operatyvinio lygmens vadovams (fakultetų dekanams, institutų, katedrų, laboratorijų, direktoratų, centrų, tarnybų ir pan. vadovams).

2. Universitetų vadovybė turi užtikrinti, kad yra funkcionuojančios sąsajos tarp strateginio ir operatyvinio vadybos lygmens, minimizuojant atotrūkį tarp deklaratyvios ir realios UVB situacijos. Ši rekomendacija taikoma visiems valstybinių universitetų strateginio lygmens vadovams (rektorato, senato, tarybos nariams ir pan.) ir operatyvinio lygmens vadovams (fakultetų dekanams, institutų, katedrų, laboratorijų, direktoratų, centrų, tarnybų ir pan. vadovams). Rekomenduojama universitete įsteigti ilgalaikę darbo grupę, kuri būtų atsakinga už sąsajų tarp strateginio ir operatyvinio UVB vadybos lygmenų funkcionalumą, atotrūkio tarp deklaratyvios ir realios situacijos mažinimą, veiklos stebėseną ir

procesų tobulinimą pasitelkiant audito, bendruomenės apklausos, fokus grupių diskusijų ir kitus metodus.

3. UVB yra paremtas tarpasmeniniais santykiais, todėl, remiantis suinteresuotųjų teorija, pagrindinis universiteto vadovybės uždavinys yra išplėtoti sistemas ir struktūras, kurios motyvuotų individualius dėstytojus, mokslo darbuotojus ir studentus neformaliai bendradarbiauti su verslo sektoriaus darbuotojais siekiant konkrečių rezultatų ir išdavų, turinčių poveikį visuomenei ir padedančių įveikti visuomenės iššūkius. Ši rekomendacija taikoma visiems valstybinių universitetų strateginio lygmens vadovams (rektorato, senato, tarybos nariams ir pan.) ir operatyvinio lygmens vadovams (fakultetų dekanams, institutų, katedrų, laboratorijų, direktoratų, centrų, tarnybų ir pan. vadovams). Šią rekomendaciją siūloma įgyvendinti įtraukiant UVB elementus į darbuotojų priėmimo į darbą, apmokėjimo, kėlimo pareigose ir kitas žmogiškųjų išteklių vadybos schemas pabrėžiant UVB dėka pasiektus rezultatus. Universiteto vadovybė taip pat turi užtikrinti forumus ir struktūras, leidžiančias universiteto dėstytojams, mokslo darbuotojams ir studentams susitikti neformaliai su verslo įmonių darbuotojais (per tinklaveikos renginius, mokslo-verslo pietus ir pan.).

4. Remiantis institucine teorija ir žinių vadybos požiūriu universiteto vadovybė turi sukurti struktūras, kurios užtikrintų iš UVB gautų žinių generavimą, nustatymą, sklaidą, taikymą, apsaugą, matavimą ir komercializavimą. Ši rekomendacija taikoma visiems valstybinių universitetų strateginio lygmens vadovams (rektorato, senato, tarybos nariams ir pan.), o įgyvendinama įsteigiant centralizuotas žinių, inovacijų ir duomenų talpyklas ir paskiriant atsakingus padalinius (bibliotekos, mokslo centro, projektų centro, žinių ir/ar technologijų perdavimo skyriai ir pan.) ir konkrečius asmenis, atsakingus už žinių vadybos plėtrą ir įgyvendinimą. Atskaitomybė gali būti užtikrinama pateikiant kasmetines ataskaitas universiteto strateginio, operatyvinio lygmens vadovybei bei visai akademinei bendruomenei. Sėkmės atvejai turi būti pripažinti, apdovanoti ir komunikuojami akademinėje bendruomenėje, nacionaliniu ir tarptautiniu lygiu.

5. UVB turi būti įtrauktas į universiteto veiklos vertinimo, paremto individualaus dėstytojo ar mokslo darbuotojo pagrindu sistemas. Ši rekomendacija taikoma visiems valstybinių universitetų strateginio lygmens vadovams (rektorato, senato, tarybos ir pan. nariams) ir operatyvinio lygmens vadovams (fakultetų dekanams, institutų, katedrų, laboratorijų, direktoratų, centrų, tarnybų ir pan. vadovams). Duomenys surenkami individualaus dėstytojo ar mokslo darbuotojo pagrindu kartą per kalendorinius metus elektroninėmis ir/ar internetinėmis priemonėmis. Rekomenduojama, kad veiklos vertinimą atliktų tarptautiniai ekspertai, kurie įvertintų visus dėstytojus ir mokslo darbuotojus penkių balų sistemoje. Visų universiteto dėstytojų ir mokslo darbuotojų veikla gali būti sureitinguota pagal vertinamųjų balų vidurkį. Šiais duomenimis siūloma remtis priimant dėstytojus ir mokslo darbuotojus į darbą, vertinant veiklos rezultatus per kadenciją, skiriant darbo užmokestį, keliant pareigose ir pan. Sėkmės atvejai ir aukščiausiais balais vertinami dėstytojai ir mokslo darbuotojai turi būti įvertinti, pripažinti ir apdovanoti, viešinami akademinėje bendruomenėje, nacionaliniu ir tarptautiniu lygiu. Padalinio (fakulteto, instituto, katedros, laboratorijos ir pan.) veiklos vertinimas gali remtis darbuotojų vertinimų vidurkiu. Universiteto biudžeto lėšos gali būti skiriamos padaliniams pagal praėjusių metų UVB veiklos rezultatus.

6. Universitetai turi plėtoti bendruosius gebėjimus – kūrybinį, analitinį ir reflektyvųjį mąstymą, tarptautinį, tarpdisciplininį ir tarpsektorinį bendradarbiavimą ir verslumą. Šie elementai turi būti įtraukti į visas mokymosi visą gyvenimą studijų programas. Rekomendacija taikoma visiems valstybinių universitetų strateginio lygmens vadovams (rektorato, senato, tarybos nariams) ir operatyvinio lygmens vadovams (fakultetų dekanams, institutų, katedrų, laboratorijų, direktoratų, centrų, tarnybų vadovams), atsakingiems už edukacinius procesus. Turi būti paskirti atsakingi padaliniai ir asmenys, atsakingi už bendrųjų gebėjimų sistemos kokybės gerinimo sistemų sukūrimą, stebėseną, matavimą ir vertinimą. Bendrųjų gebėjimų siekiniai turi būti plačiai komunikuojami per organizacijos dokumentus (strategiją, metinį veiksmų planą, ir pan), mediją (intranetą, naujienlaiškį, el. paštu ir pan.) ir pasisakymus žodžiu (susirinkimus, mokymus, kvalifikacijos kėlimo kursus ir pan).

Rekomendacijos verslo įmonių vadovybei

1. UVB valdymas turi būti įtrauktas į strateginius ir operatyvinius, ilgalaikius ir trumpalaikius verslo įmonės vadybos dokumentus (strategiją, metinį veiksmų planą ir pan.) ir plačiai komunikuojama visoje organizacijoje (per intranetą, el. paštą, naujienlaiškį, pasisakymus žodžiu ir pan.) pozityviu ir galimybes nurodančiu būdu (per gerąją praktiką, sėkmės atvejus ir pan). Ši rekomendacija taikoma strateginio (direktorių, direktorių tarybos ir pan.) ir operatyvinio lygmens (padalinio, skyriaus ir pan.) verslo įmonės vadovams.

2. Verslo įmonės vadovai turi užtikrinti, kad egzistuoja sąsaja tarp strateginio ir operatyvinio lygmens vadovų UVB kontekste, minimalizuojant atotrūkį tarp deklaratyvios ir realios situacijos. Ši rekomendacija taikoma strateginio (direktorių, direktorių tarybos ir pan.) ir operatyvinio (padalinio, skyriaus ir pan.) lygmens verslo įmonės vadovams. Rekomenduojama įsteigti ilgalaikę darbo grupę, kuri būtų atsakinga už sąsają tarp strateginio ir operatyvinio UVB vadybos lygmenų, atotrūkio tarp deklaratyvios ir realios situacijos mažinimą, veiklos stebėseną ir procesų tobulinimą pasitelkiant audito, bendruomenės apklausos, fokus grupių diskusijų ir kitus metodus.

3. UVB yra paremta tarpasmeniniais santykiais, todėl remiantis suinteresuotųjų teorija verslo įmonės turi motyvuoti savo darbuotojus bendradarbiauti su universitetų dėstytojais ir studentais siekiant konkrečių tikslų ir rezultatų. Ši rekomendacija taikoma strateginio (direktorių, direktorių tarybos ir pan.) ir operatyvinio (padalinio, skyriaus ir pan.) verslo įmonės vadovams. Šią rekomendaciją siūloma įgyvendinti įtraukiant UVB elementus į darbuotojų priėmimo į darbą, apmokėjimo, kėlimo pareigose ir kitas žmogiškųjų išteklių vadybos sistemas pabrėžiant konkrečius rezultatus, pasiektus dėl UVB. Verslo vadovai taip pat turi užtikrinti forumus ir struktūras, leidžiančias verslo sektoriaus darbuotojams susitikti neformaliai (tinklaveikos renginiai, verslo pietūs ir pan.) su universitetų dėstytojais, mokslo darbuotojais ir studentais.

4. Remiantis institucine teorija ir žinių vadybos požiūriu verslo įmonėms rekomenduojama imtis proaktyvios veiklos įsitraukiant į UVB kaip į žinių šaltinį ir sukurti struktūras, kurios leistų generuoti, identifikuoti, skleisti, taikyti, saugoti, matuoti ir komercializuoti iš UVB gautas žinias. Ši rekomendacija skirta verslo strateginio lygmens vadovams (direktoriams, direktorių taryboms ir pan.). Ji gali būti įgyvendinta sukuriant centralizuotą žinių, inovacijų ir duomenų talpyklą, paskiriant padalinius (pardavimų ar produkcijos vadybos skyrius ir pan.) ir konkrečius asmenis, atsakingus už žinių ir/ar technologijų va-

dybos plėtrą, įgyvendinimą ir komercializavimą. Rekomenduojama kasmet rengti ataskaitas apie žinių vadybą strateginiam ir operatyviniam vadybos lygiui. Sėkmės atvejai turi būti pripažinti, apdovanoti ir plačiai komunikuojami verslo įmonėje ir už jos ribų.

5. UVB turi būti įtrauktas į verslo įmonės veiklos matavimo (individualių darbuotojų, padalinių) sistemas. Ši rekomendacija taikoma verslo įmonės strateginio lygmens vadovybei (direktoriams, direktorių tarybai) ir operatyvinio lygmens (personalo skyriaus, finansų skyriaus ir pan.) vadovams. Duomenys apie įmonės darbuotojų dalyvavimą UVB turi būti renkami kartą per metus pasitelkiant elektronines ir/ar interneto sistemas. Sėkmės atvejai, pabrėžiantys individualų verslo darbuotojo indėlį turi būti įvertinti, pripažinti ir plačiai komunikuojami verslo įmonėje ir už jos ribų. Padalinio vertinimas gali būti paremtas visų darbuotojų vertinimo vidurkiu. Priedai prie atlyginimo darbuotojams turi būti skiriami atsižvelgiant į jų UVB veiklos rezultatus.

Rekomendacijos viešojo valdymo institucijų vadovams

1. UVB valdymas turi būti įtrauktas į strateginius ir operatyvinius, ilgalaikius ir trumpalaikius nacionalinius dokumentus (strategijas, veiksmų planus ir pan.) ir plačiai komunikuojamas plačiajai visuomenei (per TV, radiją, interneto portalus, viešosios vadybos institucijų tinklapius, nacionalinę ir regioninę spaudą, socialinę mediją, įvairius renginius ir pan.) pozityviu ir galimybes nurodančiu būdu (per gerąją praktiką, sėkmės atvejus ir pan.). Ši rekomendacija taikoma Švietimo ir mokslo ministerijai, Mokslo ir studijų stebėsenos ir analizės centrui (MOSTA), Ūkio ministerijai, Mokslo, technologijų ir inovacijų agentūrai (MITA), Lietuvos mokslo tarybai, Lietuvos mokslų akademijai, Seimo Švietimo, mokslo ir kultūros komitetui ir kt.

2. Viešosios vadybos institucijos, atsakingos už UVB turi užtikrinti sąsajos tarp strateginio ir operatyvinio vadybos lygmens funkcionalumą siekiant sumažinti atotrūkį tarp deklaratyvios ir realios situacijos. Ši rekomendacija taikoma Švietimo ir mokslo ministerijai, Mokslo ir studijų stebėsenos ir analizės centrui (MOSTA), Ūkio ministerijai, Mokslo, technologijų ir inovacijų agentūrai (MITA), Lietuvos mokslo tarybai, Lietuvos mokslų akademijai, Seimo Švietimo, mokslo ir kultūros komitetui ir kt. Pagrindiniai įgyvendinimo mechanizmai yra mokslo (meno) ir susijusios veiklos vertinimo metodika ir valstybės biudžeto bazinio finansavimo lėšų paskirstymas universitetams.

3. UVB yra paremta tarpasmeniniais santykiais, todėl remiantis suinteresuotųjų teorija pagrindinė viešosios vadybos institucijų užduotis yra sukurti struktūras ir sistemas, kurios motyvuotų universitetus ir verslo įmones, o ypač individualius šių sektorių darbuotojus dalyvauti UVB tinkluose ir pateikti konkrečius bendradarbiavimo rezultatus, kurie turėtų poveikį plačiajai visuomenei. Remiantis institucine teorija ir žinių vadybos požiūriu viešosios vadybos institucijos turi sukurti struktūras ir sistemas, kurios skatintų teigiamą požiūrį į verslumą bei iš UVB gautų žinių ir/ar technologijų komercializavimą. Ši rekomendacija taikoma Švietimo ir mokslo ministerijai, Mokslo ir studijų stebėsenos ir analizės centrui (MOSTA), Ūkio ministerijai, Mokslo, technologijų ir inovacijų agentūrai, Lietuvos mokslo tarybai, Lietuvos mokslų akademijai, Seimo Švietimo, mokslo ir kultūros komitetui ir kt. Pagrindiniai rekomendacijos įgyvendinimo mechanizmai būtų mokslo (meno) ir susijusios veiklos vertinimo metodika, valstybės biudžeto bazinio ir konkursinio finansavimo lėšų paskirstymas universitetams, UVB įtraukimas į visas projektų finansavimo schemas paraiškų pateikimo stadijoje, sukuriant forumas ir platformas

universitetų ir verslo įmonių darbuotojų tinklaveikai plačiai komunikuojant tai per masinės žiniasklaidos priemones (TV, radiją, interneto portalus, viešosios vadybos institucijų tinklapius, nacionalinę ir regioninę žiniasklaidą, socialinę mediją, renginius ir t.t.).

4. UVB turi būti įtraukta į institucines universitetų veiklos vertinimo sistemas, įskaitant studijų ir MTEPI procesus. Ši rekomendacija taikoma Švietimo ir mokslo ministerijai ir Lietuvos mokslo tarybai. Pagrindiniai rekomendacijos įgyvendinimo mechanizmai būtų mokslo (meno) ir susijusios veiklos vertinimo metodika ir valstybės biudžeto bazinio ir konkursinio finansavimo lėšų paskirstymas universitetams per bakalauro, magistro ir doktorantūros studijų krepšelius ir MTEPI veiklas finansuojančias schemas.

5. Visų lygių viešojo švietimo institucijos turi plėtoti bendruosius gebėjimus, tokius kaip kūrybinis, analitinis ir reflektyvus mąstymas, tarptautinis, tarpdisciplininis ir tarpsektorinis bendradarbiavimas ir verslumas. Ši rekomendacija taikoma Švietimo ir mokslo ministerijai. Bendrųjų gebėjimų siekiniai turi būti viešai iškomunikuoti per strateginius nacionalinius dokumentus (strategijas, ilgalaikius ir trumpalaikius veiklos planus ir pan.), per masinės žiniasklaidos priemones (TV, radiją, interneto portalus, viešosios vadybos institucijų tinklapius, nacionalinę ir regioninę spaudą, socialinę mediją, renginius ir pan.).

Rekomendacijos tolimesniems tyrimams

1. UVB ekosistemos antropologiniai ar kultūrologiniai tyrimai suteiktų pridėtinės vertės mokslui ir praktikai.

2. Visuomenės vertybių ir identiteto tyrimai siejant su UVB vadyba padėtų suprasti vertybinių raidą ir būtų naudingi akademinei bendruomenei ir plačiajai visuomenei. Ši tematika, tikėtina, sulauktų Europos Komisijos dėmesio ir finansavimo per Horizontas 2020, Struktūrinių ir investicinių fondų 2014–2020 m. Sumanios specializacijos prioritetinių krypčių finansavimo priemones.

3. Moksliniai tyrimai apie besikeičiančią universiteto mokslininkų tapatybę, jų savęs suvokimą ir elgseną įvairiose darbo situacijose suteiktų pridėtinės vertės UVB valdymo tyrimams ir būtų naudingi akademinėms bendruomenėms.

4. Moksliniai tyrimai siejant UVB valdymą su saugumo, teisingumo ir žmogaus teisių tyrimais būtų moksliškai įdomūs ir padėtų įveikti šiuolaikinės visuomenės iššūkius. Ši tematika, tikėtina, sulauktų Europos Komisijos dėmesio ir finansavimo per Horizontas 2020 ir/ar Struktūrinių ir investicinių fondų 2014–2020 m. finansavimo priemones.

5. UVB tyrimai siejant juos su informacinių ir komunikacinių technologijų bei socialinės medijos plėtra būtų įdomūs ir naudingi akademinei visuomenei ir plačiajai visuomenei. Ši tematika, tikėtina, sulauktų Europos Komisijos dėmesio ir finansavimo per Horizontas 2020 ir/ar Struktūrinių ir investicinių fondų 2014–2020 m. Sumanios specializacijos prioritetinių krypčių finansavimo priemones.

6. UVB vadyba iš gyvenimo kokybės, išmanios, tvarios ir įtraukios visuomenės perspektyvos suteiktų pridėtinės UVB tyrimams. Ši tematika, tikėtina, sulauktų Europos Komisijos dėmesio ir finansavimo per Horizontas 2020 ir/ar Struktūrinių ir investicinių fondų 2014–2020 m. finansavimo priemones.

7. UVB kaip integracinė tarpdisciplininių, tarpsektorinių, multidimensinių tyrimų priemonė išryškinanti socialinių ir humanitarinių mokslų vaidmenį plėtojant UVB praktiką būtų įdomus ir naudingas mokslinių tyrimų objektas.

8. Longitudiniai moksliniai tyrimai apie UVB ryšių formavimąsi ir plėtrą papildytų UVB tyrimus įdomiomis raidos įžvalgomis.

9. Moksliniai tyrimai apie gebėjimus plėtoti UVB praktiką iš jaunystėje suformuotų draugų rato ir bendradarbiavimo praktikų, tokių kaip vidurinių mokyklų klasės ar universiteto kurso draugai, sporto ar hobio klubuose bei pirmosiose darbovietėse užsimezgę ryšiai suteiktų įdomių įžvalgų UVB tyrimų sričiai ir būtų naudingi plačiajai visuomenei.

10. Demografinių ir tarpgeneracinių tyrimų sąsaja su UVB valdymu suteiktų pridėtinės vertės esamiems teoriniams ir empiriniams tyrimams bei padėtų įveikti su senėjančia visuomene susijusius iššūkius. Ši tematika, tikėtina, sulauktų Europos Komisijos dėmesio ir finansavimo per Horizontas 2020 ir/ar kitas Struktūrinių ir investicinių fondų 2014–2020 m. Sumanios specializacijos prioritetinių krypčių finansavimo priemones.

11. Moksliniai tyrimai apie UVB vadybos iš genderinių tyrimų perspektyvos suteiktų pridėtinės vertės UVB tyrimų sričiai siejant su Horizontas 2020 programa, ypač su 2016/2017 m. darbo programa.

12. Aplinkosaugos problemų sprendimas, klimato kaitos ir tvarių bendruomenių plėtra siejant su UVB taip pat būtų įdomus teorinis ir empirinis tyrimo objektas, ši tematika, tikėtina, sulauktų Europos Komisijos dėmesio ir finansavimo per Horizontas 2020 ar Struktūrinių ir investicinių fondų 2014–2020 m. Sumanios specializacijos prioritetinių krypčių finansavimo priemones.

13. Moksliniai tyrimai apie UVB kaip priemonę spręsti visuomenės sveikatos ir sveikos gyvensenos klausimus būtų įdomi ir naudinga mokslinių tyrimų kryptis. Tikėtina, kad ši tematika sulauktų Europos Komisijos dėmesio ir finansavimo per Horizontas 2020 ir/ar Struktūrinių ir investicinių fondų 2014–2020 m. Sumanios specializacijos prioritetinių krypčių finansavimo priemones.

14. UVB tyrimai iš mediacijos ir darnaus ginčų sprendimo perspektyvos būtų įdomus mokslinių tyrimų objektas ir jo praktinis pritaikymas būtų naudingas plačiajai visuomenei.

15. UVB tyrimai iš multikultūralizmo požiūrio būtų įdomus mokslinių tyrimų objektas. Tikėtina, kad ši tematika sulauktų Europos Komisijos dėmesio ir finansavimo per Horizontas 2020 ir/ar Struktūrinių ir investicinių fondų 2014–2020 m. Sumanios specializacijos prioritetinių krypčių finansavimo priemones ir padėtų rasti Europos valstybėms sprendimus dėl pabėgėlių ir su jais susijusių klausimų.

MOKSLINĖS PUBLIKACIJOS

PUBLIKACIJOS DISERTACIJOS TEMA

Straipsniai Lietuvos recenzuojamuose mokslo leidiniuose

1. Gudelienė, Nomeda. Shifting university values, mission and organisational culture: a dilemma for leadership // Social media : challenges and opportunities for education in modern society : research papers = Socialinės medijos : iššūkiai ir galimybės suaugusiųjų švietimui. Vilnius: Mykolas Romeris University. ISSN 2335-738X. Vol. 1, No 1, 2013, p. 78-82. [M.kr. 03S]
2. Justickis, Viktoras; Gudelienė, Nomeda; Plenta, Juris. New medical knowledge: what socio-managerial mechanisms enhance its application in health care practice? // Societal innovations for global growth : research papers = Socialinės inovacijos globaliai plėtrai. Vilnius: Mykolo Romerio universitetas. ISSN 2335-2450. 2012, No. 1(1), p. 906-926. [M.kr. 03S]

KITOS PUBLIKACIJOS

Straipsniai recenzuojamoje užsienio konferencijų medžiagoje

1. Urbanovič, Jolanta; Vasiljevienė, Nijolė; Žalėnienė, Inga; Gudelienė, Nomeda. Research on academic integrity. The role of awareness of local environment in developing university anti-plagiarism strategy // Plagiarism across Europe and beyond 2015 : conference proceedings : June 10–12, 2015 Brno, Czech Republic / Mendel University in Brno. Brno: Mendelu Publishing Centre, 2015, ISBN 9788075092670. P. 75-90. [M.kr. 03S]

Mokslo šaltinių publikacijos, mokslo apžvalgos, straipsniai kultūros, profesiniuose ir mokslo populiarinimo leidiniuose

1. Tauginienė, Loreta; Gudelienė, Nomeda. Mykolas Romeris University [Lithuania]. Doctoral studies' history // History of doctoral programmes in management and business administration : EDAMBA : 20 Years of Cooperation 1991-2011 / editors : Eduart Bonet, Károly Balaton. [Brussels]: EDAMBA, [2012]. P. 141-144. [M.kr. 03S]

Tezės recenzuojamoje konferencijų medžiagoje

1. Gudelienė, Nomeda. University mission and organisational culture : a dilemma for leadership // Social media : challenges and opportunities for education in modern society : international interdisciplinary scientific conference : abstract book, May 3, 2012 [elektroninis išteklius] / Mykolo Romerio universitetas. Vilnius: Mykolo Romerio universitetas, 2012, ISBN 9789955194583. P. 16. [M.kr. 07S]
2. Justickis, Viktoras; Plenta, Juris; Gudelienė, Nomeda. Research application mechanisms in medical practice // SOCIN 2012: 1st international interdisciplinary conference on social innovations : abstracts' book of Mykolas Romeris University research days 2012 "Social innovations: theoretical and practical insights" [elektroninis išteklius] / Mykolas Romeris University. Vilnius: Mykolas Romeris University, 2012, ISBN 9789955194590. P. 266-267. [M.kr. 06B]

Straipsniai ir tezės nerecenzuojamoje konferencijų medžiagoje

1. Tauginienė, Loreta; Gudelienė, Nomeda. Joint Doctoral Studies and Research in Lithuania: Mykolas Romeris University's Experience and Practice // International Seminar on Joint Degrees : Final seminar of the JOIMAN project : [elektroninis išteklius] 10/29/2010. [Vilnius: Vilniaus universitetas, 2010]. p. 1-9. [M.kr. 03S]

KITOS KNYGOS

1. Geoghegan-Quinn, Máire; Petrauskaitė, Rūta; Mayer, Katja (redakt.); König, Thomas (redakt.); Nowotny, Helga (redakt.); Gudelienė, Nomeda (redakt.). Horizons for social sciences and humanities : conference report : September 23-24th, 2013 Mykolas Romeris University, Vilnius, Lithuania / Mykolas Romeris University; edited by: Thomas König, Katja Mayer, Helga Nowotny ; copy editor Nomeda Gudelienė. Vilnius : Mykolas Romeris University, 2014. 199 p. : iliustr. ISBN 9789955196259. [M.kr. 03S]

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Disertacija buvo siekiama išnagrinėti universitetų ir verslo bendradarbiavimo (UVB) fenomeną ir remiantis teorinio bei empirinio tyrimo rezultatais sukurti konceptualųjį normatyvinį UVB valdymo modelį. Tyrimo metodologija rėmėsi fenomenologine ir heuristinės analizės strategija, veiksmo ir lauko tyrimo elementų integracija. Buvo išnagrinėtos UVB teorinės prielaidos, išanalizuota užsienio valstybių UVB valdymo geroji praktika, atlikta Lietuvos UVB atvejo analizė, sukurtas konceptualusis normatyvinis UVB valdymo modelis. Padarytos išvados, kad UVB valdymo teorinis pagrindas gali būti nagrinėjamas atsižvelgiant į Naujosios viešosios vadybos ir Naujojo viešojo valdymo doktrinų raidą, perėjimą nuo tradicinio prie korporatyvinio universitetų valdymo modelio, Trigubos spiralės, Keturgubos spiralės ir Penkiagubos spiralės žinių kūrimo ir valdymo modelius, tinklaveikos, žinių ir inovacijų vadybą. Lietuvoje atskirtį tarp universitetų ir verslo sąlygoja silpnos UVB tradicijos, strateginio valdymo stoka, lyderystės ir konsoliduojančios institucijos trūkumas, žemas bendradarbiavimo ir verslumo kultūros lygis.

The dissertation aimed to explore the concept of UBC governance and on the basis of theoretical and empirical research results develop a conceptual normative UBC governance model. Research methodology was based on the phenomenological and heuristic inquiry strategy and integration of action research and fieldwork research elements.The dissertation included the analysis of the theoretical framework of UBC governance, exploration of the best practices of UBC governance in foreign countries, examination of the case of UBC governance in Lithuania, and development of the conceptual normative model. It was concluded that the theoretical framework for UBC governance can be examined with regard to the evolution of New Public Management and New Public Governance doctrines, the shift from Conventional or Mode 1 to Corporative or Mode 2 approach, the knowledge creation models of the Triple Helix, the Quadruple Helix and the Quintuple Helix, network, knowledge and innovation management.University and business divide in Lithuania is caused by weak UBC traditions, lack of strategic management, lack of leadership and consolidating institution, and low level of cooperative and entrepreneurial culture.

Nomeda Gudelienė

UNIVERSITY AND BUSINESS COOPERATION GOVERNANCE IN LITHUANIA

Doctoral dissertation

Maketavo *Jelena Babachina*

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