VILNIUS GEDIMINAS TECHNICAL UNIVERSITY

Bahman PEYRAVI

MODELLING OF INTERNATIONAL TRANSFER OF GOOD PRACTICES OF INNOVATION MANAGEMENT UNDER CONDITIONS OF EUROPEAN INTEGRATION

DOCTORAL DISSERTATION

SOCIAL SCIENCES,
MANAGEMENT (03S)

Vilnius LEIDYKLA TECHNIKA 2017

VILNIAUS GEDIMINO TECHNIKOS UNIVERSITETAS

Bahman PEYRAVI

TARPTAUTINIO GEROSIOS INOVACIJŲ VADYBOS PRAKTIKOS PERDAVIMO EUROPOS INTEGRACIJOS SĄLYGOMIS MODELIAVIMAS

DAKTARO DISERTACIJA

SOCIALINIAI MOKSLAI,
VADYBA (03S)

Disertacija rengta 2012–2017 metais Vilniaus Gedimino technikos universitete.

Vadovas

prof. habil. dr. Borisas MELNIKAS (Vilniaus Gedimino technikos universitetas, vadyba – 03S).

Vilniaus Gedimino technikos universiteto Vadybos mokslo krypties disertacijos gynimo taryba:

Pirmininkas

doc. dr. Renata KORSAKIENĖ (Vilniaus Gedimino technikos universitetas, vadyba – 03S),

Nariai:

prof. habil. dr. Romualdas GINEVIČIUS (Vilniaus Gedimino technikos universitetas, vadyba – 03S),

prof. dr. Bronius NEVERAUSKAS (Kauno technologijos universitetas, vadyba – 03S),

habil. dr. Marek SZARUCKI (Krokuvos ekonomikos universitetas, Lenkija, vadyba – 03S),

doc. dr. Živilė TUNČIKIENĖ (Vilniaus Gedimino technikos universitetas, vadyba – 03S).

Disertacija bus ginama viešame Vadybos mokslo krypties disertacijos gynimo tarybos posėdyje **2017 m. rugpjūčio 31 d. 10 val.** Vilniaus Gedimino technikos universiteto senato posėdžių salėje.

Adresas: Saulėtekio al. 11, LT-10223 Vilnius, Lietuva.
Tel.: (8 5) 274 4956; faksas (8 5) 270 0112; el. paštas doktor@vgtu.lt

Pranešimai apie numatomą ginti disertaciją išsiųsti 2017 m. liepos 18 d.

Disertaciją galima peržiūrėti VGTU talpykloje http://dspace.vgtu.lt ir Vilniaus Gedimino technikos universiteto bibliotekoje (Saulėtekio al. 14, LT-10223 Vilnius, Lietuva).

Abstract

This dissertation analyses the innovation needs of candidate and possible candidate countries of European Union, as well as the good practices and progressive experience of Central-East European countries in order to transfer their experiences in innovation management based on its development and needs, opportunities and prospects of capacity and capability improvement. The aim of the thesis is to create an international transfer model of good practices in innovation management which is relevant to the contemporary needs of candidate and possible candidate countries of European Union, based on explored practices of innovation management in Central-East European countries in order to develop innovation infrastructure and activities in candidate and possible candidate countries with researched factors that influence the transfer process of good practice and progressive experiences.

An original system of indicators for characterization, a technique for multi-criteria assessment of innovation needs in candidate and possible candidate countries, and good practices and progressive experiences of the Central-East European countries are presented in this dissertation. This dissertation, consists of an introduction, three chapters, general conclusions, references, list of author's scientific publications and annexes. The introduction presents the research problem, the importance of the thesis and its scientific novelty. It reveals the object of the research and describes the goals of the paper, as well as its research methodology and practical significance.

The review of scientific literature is performed in Chapter 1, together with the opportunities and need for international transfer of good practices in innovation management in candidate and possible candidate countries of the European Union in order to prompt integration and accession process. This is done by analyzing scientific literature in the field of innovation, innovation management and public innovation support regarding enlargement conditions of the European Union.

Chapter 2 presents theoretical model and methods applicable for quantitative assessment of the good practices and progressive experiences of Central-East European countries in innovation management, as well as the needs of innovation in candidate and possible candidate countries that are generalized and considered as international transfer model of good practices in innovation management.

The practical application of the proposed model is presented in Chapter 3. The performed empirical research confirms the practical applicability of the international transfer model of good practices in innovation management and reveals perspectives and limitations for its use.

7 scientific papers focusing on the subject of the discussed dissertation have been published, 10 presentations, 3 of which were at international conferences were given.

Reziumė

Disertacijoje analizuojami Europos Sąjungos šalių kandidačių ir galimų kandidačių inovacijų poreikiai kartu su pažangia Centrinės ir Rytų Europos šalių patirtimi, norint perduoti inovacijų vadybos gerąją praktiką remiantis jų raida, poreikiais, galimybėmis, pajėgumais ir jų tobulinimu. Disertacijoje siekiama sukurti tarptautinio gerosios inovacijų praktikos perdavimo iš Centrinės ir Rytų Europos modelį, atitinkantį šiuolaikinius Pietryčių Europos šalių poreikius. Modelis atitinka šiuolaikinius Europos Sąjungos šalių kandidačių ir galimų kandidačių poreikius, remiantis nustatytomis Centrinės ir Rytų Europos šalių inovacijų vadybos praktikomis, siekiant plėtoti šalių kandidačių ir galimų kandidačių inovacijų infrastrūrą bei veiklas pagal ištirtus veiksnius, lemiančius gerosios praktikos perdavimo procesus.

Disertacijoje pristatoma originali veiksnių sistema, daugiafaktore analize grindžiama šalių kandidačių ir galimų kandidačių inovacijų poreikių bei Centrinės ir Rytų Europos gerosios praktikos bei pažangos patirties vertinimo metodika. Darbą sudaro įvadas, trys skyriai, bendrosios išvados, literatūros sąrašas, autoriaus mokslinių publikacijų sąrašas ir priedai. Įvade pristatyta tiriamoji problema, disertacijos svarba ir mokslinis naujumas, atskleistas tyrimo objektas, apibūdintas darbo tikslas, tyrimų metodologija ir jų praktinė reikšmė.

Pirmajame skyriuje atlikta mokslinės literatūros analizė, pabrėžiamos tarptautinio gerosios inovacijų vadybos praktikos perdavimo galimybės ir poreikis šalių kandidačių ir galimų kandidačių spartesnei integracijai Europos Sąjungoje vykdant jų prisijungimo procesą. Analizė grindžiama inovacijų, inovacijų vadybos ir mokslinės literatūros apžvalga bei viešosios inovacijų paramos Europos Sąjungos plėtros sąlygomis medžiaga.

Antrajame skyriuje pristatomas teorinis modelis ir metodai, taikomi Centrinės ir Rytų Europos inovacijų vadybos pažangios patirties bei Pietryčių Europos regiono inovacijų poreikių kiekybiniam vertinimui, kuris apibendrinamas ir traktuojamas kaip tarptautinio gerosios inovacijų vadybos praktikos perdavimo modelis.

Siūlomo modelio praktinis pritaikymas pristatomas trečiajame skyriuje. Atlikti empiriniai tyrimai patvirtina tarptautinio gerosios inovacijų vadybos praktikos perdavimo modelio praktinį pritaikymą ir atskleidžia jo taikymo galimybes bei ribojimus.

Disertacijos tema paskelbti 7 moksliniai straipsniai, taip pat 10 pranešimų, 3 iš kurių – tarptautinėse konferencijose.

Notations

Symbols

c_i – sum of primary assessments for i-criteria;

c_{ij} – evaluation of i-criteria made by j-expert;

i – number of expert's evaluation criteria;

J – number of expert;

m – number of criteria;

n – number of objects;

r – correlation coefficient;

r – rank;

r_{ij} – value of i – index for j – object;

S – sum of squared deviations;

S_j – sum of weighted evaluations made by j-expert;

t – T statistic;

W – concordance coefficient;

ω_i – weight of i-index;

X_{kr}^2 – critical evaluation of concordance coefficient's reliability;

x – horizontal axis;

y – vertical axis.

Abbreviations

ALB – Albania
B&H – Bosnia and Herzegovina
BRITE – Basic Research in Industrial Technologies
CEE – Central East Europe
COMETT – Community Programme in Education and Training for Technology
CPC – Candidates and Possible Candidates Countries
EC – European Commission
EE – Estonia
ESPRIT – European Strategic Programme for Research and Development on Information Technology
EU – European Union
FDI – Foreign Direct Invest
HDI – Human Development Index
ICT – Information and Communication Technology
IR – International Regime
IT – Information Technology
ITMGPIM – International Transfer Model of Good Practices in Innovation Management
LT – Lithuania
LV – Latvia
MAC – Macedonia
MIT – Massachusetts Institute of Technology
MON – Montenegro
OECD – Organization for Economic Co-operation and Development
OPEC – Organization of the Petroleum Exporting Countries
PCT – Patent Cooperation Treaty
R&D – Research and Development
RTD – Research and Technological Development
SAW – Simple Additive Weighting
SEE – South East Europe
SME – Small and Medium Enterprises
SME – Small and Medium Enterprises
SRB – Serbia
STI – Science, Technology and Industry
TEP – Technology Economy Programme
UK – United Kingdom
UNCTAD – United Nation Conference on Trade and Development

Contents

[1] The annexes are supplied in the enclosed compact disc.

Introduction

Formulation of the Problem

There are new challenges for innovation activities in the European social and economic space and a new needs of the improvement of innovation management based on the international transfer of good practices, which could be used to develop the innovation activities in all spheres of social and economic life under contemporary conditions of European integration and possible further enlargement of the European Union. There is a lack of theoretical solutions and models of international transfer of good practices of innovation management. This lack could be defined as an important scientific and practical problem to European social and economic space in general, as well as an especially important problem of the South-East European countries, which should use and apply many good practices and progressive experiences transferred from the Central-East Europe, including Baltic countries. The demand of new approaches for international transfer of good practices in innovation management is caused by:

- Limited experience in innovation management in candidate and possible candidate countries to meet the needs of business and public benefit.
- Limited effectiveness of innovation support system in candidate and possible candidate countries.

 − Lack of theoretical background which could support innovation infra-
   structure in order to achieve a higher innovation performance, and also
   to support the understanding of the need of experience in innovation
   management relevant to the national socio-economic development.
 − Lack of assessment methods to observe progressive experience in inno-
   vation management, and lack of abilities to transfer it to candidate and
   possible candidate countries under the conditions of enlargement of Eu-
   ropean Union.

Relevance of the Thesis

As the enlargement process of the European Union reaches South-East Europe,
candidate (Albania, Montenegro, Serbia, FYR Macedonia) and possible candi-
date countries (Bosnia and Herzegovina, Kosovo) have to, firstly, find their own
agenda in the field of innovation; secondly, require open discussion at public,
governmental and institutional level; thirdly, manage the immediate necessity
for the government to update existing programs and fourthly, search to harmo-
nize the domestic content with the European agenda. Moreover, it is important to
analyze the necessity for innovation and provide its administrative structure.

      The research on the necessity of innovation in candidate and possible can-
didate countries under the conditions of European integration, and also the as-
sessment of good practices and progressive experience of Central-East European
countries in innovation management in order to transfer it to candidate and pos-
sible candidate countries make this thesis more comprehensive and meaningful,
when evaluating the administrative structure in the context of innovation, it is
important to describe innovation itself and the management process.

Object of the Research

The international transfer of good practices of innovation management, especial-
ly transfer of the experiences of innovation activities and good practices in inno-
vation management from the Central-East Europe to the South-East European
countries.

Aim of the Thesis

The aim of the thesis is to investigate the main long-term processes of interna-
tional transfer of good practices in innovation management in the context of

contemporary trends of European integration and the enlargement of the European Union, and in this context, to create a theoretical model for international transfer of good practices of innovation management, especially from the Central-East Europe to the South-East European countries.

Tasks of the Thesis

To achieve the aim of the thesis, the following tasks have to be solved:

1. To analyse scientific literature in the field of innovation, innovation management and public innovation support and to disclose opportunities and needs for international transfer of good practices in innovation management for candidate and possible candidate countries in order to prompt integration in the European Union during the accession process.

2. To revise good practices of innovation management in Central-East European countries, aiming to reveal the improvement patterns and dimensions of innovation activities in candidate and possible candidate countries.

3. To develop theoretical model and select appropriate research methods required for quantitative assessment of good practices and progressive experiences of Central-East European countries in innovation management field as well as the needs of innovation transfer in the Candidate and Possible candidate countries.

4. To perform empirical research that confirms the practical applicability of the international transfer model of good practices in innovation management and reveal perspectives and limitations for its use.

Research Methodology

A critical review of literature along with the methods of interpretation and conceptualization has been used for defining the problem of innovation management and the need of international transfer of good practices in innovation management. A review of techniques for international transfer of good practices has been conducted by analysing scientific material, primary and secondary data analysis, comparative analysis of statistical data, multi-criteria assessment, expert surveys, correlation analysis methods. At Stage 1 and 2 of the comprehensive International Transfer Model of Good Practices in Innovation Management, SAW multi-criteria evaluation method and correlation analysis method have been applied for data normalization. For testing the model, empirical research has been conducted. The obtained results have been interpreted with reference to graphical analysis and logical abstraction methods.

Scientific Novelty of the Thesis

Scientific novelty is observed by main results:

   1.   A new research field, defined in the area of international transfer of good practices in innovation management, has led to the development of significant assessment base of advanced experience transfer.

   2.   Common for all candidate and possible candidate countries of the European Union and specific for South-east European countries, patterns of international transfer of good practices in innovation management were identified which creates new opportunities for the achievement in innovation activities and higher innovation performance.

   3.   Quantitative indicators as well as method for transfer of good practices in innovation management multi-criteria analysis enables creation and implementation of measures devoted to transfer of good practices in innovation management from Central-east Europe to candidate countries and possible candidate countries of European Union especially in South-East Europe in each social and economic sector as well as key institutions.

   4.   A comprehensive International Transfer Model of Good Practices in Innovation Management has been developed which is based on theoretical argumentation and practical verification. The model creates a precondition for systematic transfer of good practices from Baltic countries to candidate and possible candidate countries of the European Union for processes of strategy development and innovation management in order to prompt social and economic integration during accession process. The algorithm for transfer of good practices results into strategic insights has been created and directions towards the formation of the strategy for the transfer process have been established. The structure based on new solutions and quantitative assessment methods.

Practical Value of the Research Findings

The presented research results can be applied in transfer of good practices and progressive experiences in innovation management from Central-East Europe to candidate countries and possible candidate countries of the European Union especially in South-East Europe which will be relevant to the social and economic development priorities and innovation needs of businesses. The practical application of the presented model is significant for policy makers, social and economic sectors of South-East European countries as well as key institutions. The research results are suitable to be used for the study programs in management and economics.

Defended Statements

1. High level of productivity and sustainable economic growth can be reached by target based innovation policies and innovative businesses. Due to strategic and complex nature of innovation, transfer of good practices in innovation management is necessary in order to achieve higher performance in innovation activities. This approach is vital for the candidate and future candidate countries of the European Union in order to prompt the integration process and to increase competitiveness in common market of the European Union.

2. In order to diminish the risks and prompt the innovation process, it is significant to carry out a systematic and effective assessment in all stages of transfer of good practices.

3. Proposed quantitative assessment methods and model should be used in direct and indirect effect of needs of innovation which can be defined as change of characteristic of innovation activities and allocation of resources.

Approval of the Research Findings

7 scientific papers focusing on the subject of the discussed dissertation have been published, while 10 speeches were given, 3 of which were at international conferences.

Structure of the Dissertation

The dissertation consists of an introduction, three chapters and general conclusions, a list of references and a list of publications by the author on the topic of the dissertation, summary in Lithuanian and 4 annexes. The scope of the dissertation includes 116 pages excluding annexes. 13 numbered formulas, 5 figures and 25 tables are used, 205 literature sources were referenced when preparing a doctoral dissertation. Figure 01 presents the logical structure of the dissertation:
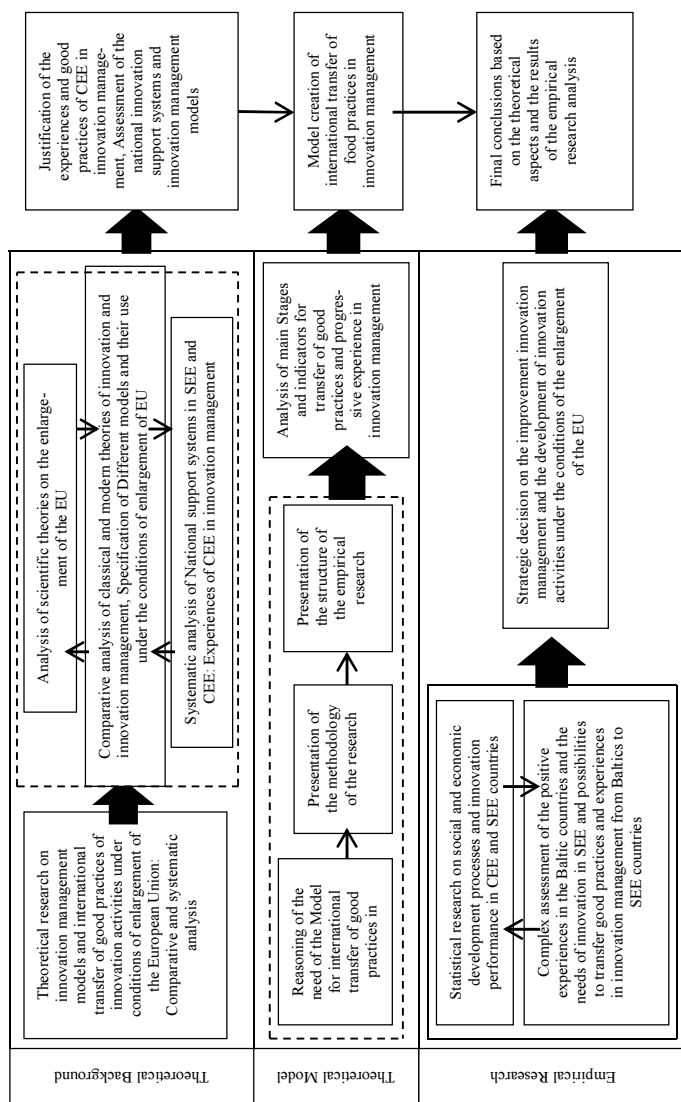
Fig. 01. Structure of the dissertation. Source: Created by author

1

Theoretical Research on International Transfer of Good Practices in Innovation Management

This chapter provides an overview of the enlargement process of the European Union, the role of innovation and its use under the conditions of the enlargement. Furthermore, the necessity to consider the need for international collaboration in innovation management, and the necessity of transfer of the good practices and progressive experience from Central-East Europe (CEE) countries to Candidate and Possible Candidate countries (CPC) especially South-East Europe (SEE) states for successful innovation activities are discussed in this chapter in order to address critical issues of innovation management. The results of this chapter can be found in author's publications, Peyravi (2012, 2014 and 2015).

Moreover, this chapter examines the concepts and theories related to innovation, and innovation management as a special phenomenon of sustainable social and economic development in the context of enlargement of European Union.

1.1. European Integration and Enlargement of the European Union: Main Priorities, Theoretical Approach, the Challenges and Needs of Innovation Activities

This section focuses on various theoretical studies of the European Union's enlargement and integration process. According to Schimmelfenning and Sedelmeier (2002), the lack of theoretical approaches was the biggest issue in order to study the enlargement of EU. However, there is very important studies which allowing us to have general overview on this topic. For instance, the European Union policy on common market; Heritier (1996), policy regulation on internal economic conditions; McGowan and Wallance (1996), democratization and open political systems in candidate countries; Linz and Stepan (1996) and Kopecky and Mudde (2000), Perspectives of candidate countries on institutional development; Batt and Wolczuk (1999), integration obstacles in EU agenda for candidate countries; Brusis (1998), European Union dynamics for social and economic development for the non-member European countries; Weber (1995), can be pointed as the important studies.

Bartkowski (2003), analyzing theoretical approaches to the EU enlargement and presents significant perspective. In summary, this study, emphasizing on Federalism: tragic consequences of the second world war by the international politics…; Spinelli and Rossi (1998), Functionalism: concept of "spill-over" … each function was used to obtain by stages; Mitrany (1998), Neofunctionalism: spill-over of enlargement and integration goes over existing members based on geographical dimension and integration; Scheingold and Lindberg (1970), Intergovernmentalism: the role of national interest as the direct force on the government; Hoffmann (1995); Moravcsik (1993) and Putnam (1998), Multi-level Governance: the unity of government institutions; Marks *et al.* (1996), Interdependency: shape of economic interactions that highly effect on political decisions…; Webb (1983) and Chryssochou (2001), International regime: international regime can be defined as set of "rules, principles, norms, standards and decision-making operations on issues"…; Krasner (1982), Rationalist Institutionalism: institutional structure and stress on 'maximization' function; based on March and Olsen (1989), Transactionalism: value of social communication and transaction between nations; Deutsch (1957), Social Constructivism and Sociological Institutionalism: effect of norms and socialization processes in the context of enlargement of the EU; Checkel and Moravcsik (2001); Schimmelfenning (2001); Christiansen, Jorgensen and Wiener (1999), Europeanization: significant approach on impact of various EU enlargement issues; based on Grabbe (2002). The studies present general understanding and overview on theoretical

approaches and analytical conceptualization, which are connected with the integration issues of the European Union.

Taking into consideration the mentioned approaches above, it is very important to highlight the main development tendencies and priorities of the enlargement. According to Kok (2003), "enlargement is the most ambition project that EU is undertaking…" The Maastricht Treaty indicates that any European country can apply for EU membership after accomplishing a set of social and economic reforms, known as the "Copenhagen criteria". In general the criteria include the following:

- Political: the rule of law, human rights and respect, protection of minorities, stable institutions guaranteeing democracy.
- Economic: a functioning market economy and the capability to cope with market competition in the EU.
- The capacity: obligation of membership including adherence to objectives of economic, political and monetary union.
- Adaptation: effective implementation through appropriate judicial and administrative structure.

The Enlargement of European Union moves to South-east of the Europe. The countries which fulfulfil all the criteria and show convergence on social, politic and economic integration, they will succeed full membership of the EU.

According to Archick (2012), EU leaders emphasized that they would pay particular attention to SEE's reforms in the area of rule of law, fundamental human rights and fight against corruption and organized crime. Many member countries in the EU consider SEE countries as being slow to implement necessary economic, social and political reforms.

Taking into consideration the challenges that candidate countries face during the accession process, the importance of innovation, innovation management and the efficient innovation support system in order to find sustainable solutions for the integration issues must be emphasized in further sections, arising from the general approaches of key thinkers who define innovation as the heart of competitiveness, economic growth, productivity, social development and job creation that play a vital role in EU integration. As candidates, the SEE countries should develop sustainable innovation policies in order to reinforce social and economic integration with the EU. In this context, in order to strengthen the backbone of the dissertation, classical and modern theories of innovation, innovation management and the structure of the innovation support system and the role of the key institutions and actors in CEE and SEE countries will be addressed in detail in the following section.

1.2. Innovation and Innovation Management: the Main Theories and Their Application under Contemporary Conditions of European Integration

To begin with, the general characteristic and classification of the classical and modern theories and theoretical models of innovation and innovation management must be identified. Innovation is not something new, it exist in many shapes. According to Tidd *et al.* (2005), innovation is vital for countries and their social and economic development. Many scholars have focused on innovation management practices; the following can be counted as the major studies on innovation management: Industry and technological progress (Carter and Williams, 1957); Queens awards for technical innovation (Langrish *et al.* 1972); Success and failure in chemical industry (Rothwell *et al.* 1974); Fourteen case studies of innovations (Van de Ven, 1989; Twenty-five years review of studies (Rothwell, 1992); Five major industry-level cases (Utterback, 1994); Longitudinal survey of success and failure in new products (Cooper 1994); Review of mature businesses (Leifer *et al.* 2000); Literature review of success and failure factors (Van der Panne *et al.* 2003). These studies give a general perspective on how innovation management is important for many key scholars in order to find solution for various issues. Hansen and Birkinshaw (2007) define innovation management as the dynamic, conscious organization, and implementation of activities that guide an innovation process. Figure 1.1 provides a general understanding on the innovation process.
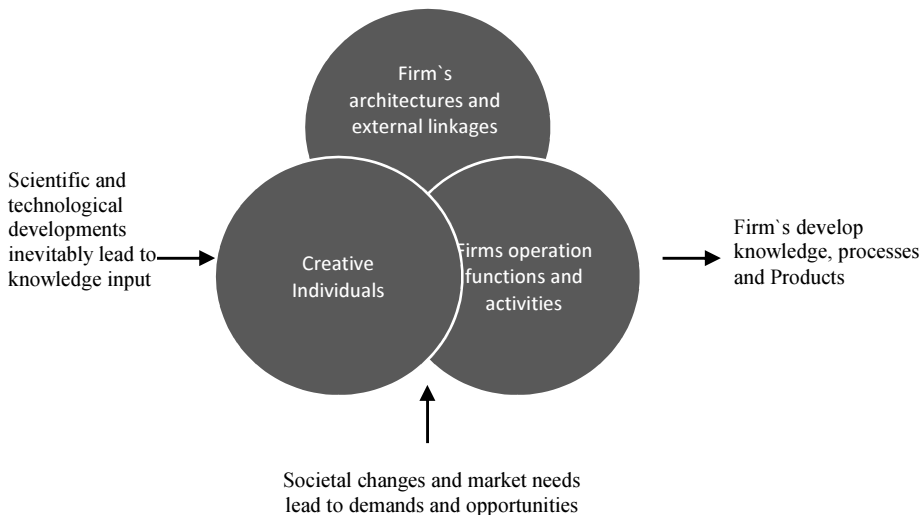
Fig. 1.1. Overview of the innovation process (Trott, 2006)

By description, it is possible to remark that all innovations have an essence of novelty in them. They are dissimilar from what existed before. Indeed, scholars have over the years proposed numbers of different innovation typologies (see Table 1.1), or ways of classifying innovations.

Table 1.1. A typology of innovations (Chandy, Jaideep, 2010)

Dimension of Novelty				
Feature		Concept	Customer	Company
	Attributes	Product/services/processes Innovation Technological breakthrough/ Platform innovation Component innovation Architectural/design innovation Business model innovation	Market breakthrough Disruptive innovation	New to firm innovation Organizational / administrative / management innovation
	Effects	Drastic innovation Revolutionary innovation	Discontinuous Innovation Disruptive innovation	Competence-destroying innovation Competence-enhancing innovation Disruptive innovation

It is possible to present development process, sources and impact of the typology of innovations by distinguishing them. In this context, Ravichandran (2000) attached innovation activities to 1) typology, 2) product, service or process, 3) usefulness of innovations and 4) volume of profitability.

Niosi (1999) explains four generations of innovation types which were expanded to five generations by Rothwell in 2002 (see Table 1.2). The first and second generations are based on linear models, the so-called need-pull and technology-push. The third generation is based on interaction between various elements and feedback, for instance, various functions of enterprises in marketing, R&D and manufacturing. The fourth generation leans on combining the actions of various elements of organizations on existing projects and networks or strategic collaboration with other organizations. The fifth generation focuses on the use of innovation models in integration with organizations that aim to develop effective knowledge transfer.

For the decades, the linear model had significant role for policy development in industry (Trott, 2002), and also, point out innovation as being a linear series of activities that are either technology-driven or market-driven (see Figure 1.2). The technology-push counts on a series of activities from finding ideas

in R&D and implementation of ideas to product development by engineers and promotion of the product to customer by marketing professionals (Niossi, 1999). The technology-push model is based on predictions to respond to market needs (Bores *et al.* 2003).

Table 1.2. Development in conceptualizing innovation: five generations of innovation types (Rothwell 2002)

Generation	Key Roles
First and Second	The linear models: demand-pull and technology-push
Third	Interaction between various elements and feedback loops among them – the coupling model
Fourth	The parallel lines model, integration within the firm, linkage with key suppliers and active customers
Fifth	System integration and extensive networking, flexible and customized response, continuous innovation
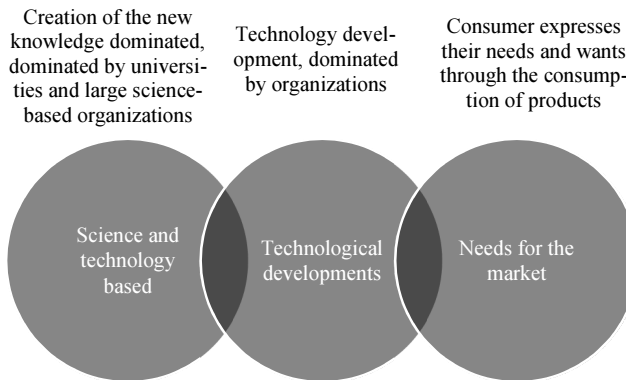
Fig. 1.2. Conceptual framework of innovation (Trott 2002)

The market-pull leans on the importance of interaction with customers for successful innovation (Trott, 2002; Clark, 1979). In this context, there is a strong link between the marketing ability of firms and customer needs in order to develop products. In summary, the main focus is on the market needs. It is the essence of the new ideas (Tidd *et al.* 2001; Cooper and Kleinschmidt 1991).

The most important point is that innovation process can be accepted as the set of internal and external connections in which experience and knowledge is transferred. Organizations that are able to manage this process have a better performance in innovation activities. Basically, innovation models are the functions of R&D in organizations, design and engineering process, sales, manufacturing and marketing. According to Trott (2002), the generation of the models is shown to be dependent on inputs from three basic elements: organization capabilities, needs of the market and the science and technology base. Table 1.3 presents how innovation models developed chronologically.

Table 1.3. Chronological development of innovation models (Rothwell 2002)

Date	Model	Characteristics
1950/60s	Technology-push	Simple linear sequential process; emphasis on R&D; the market is a recipient of the fruits of R&D
1970s	Market-pull	Simple linear sequential process; emphasis on marketing; the market is the source for directing R&D; R&D has a reactive role
1970s	Dominant design	Illustrate that an innovation system goes through three stages before a dominant design emerges
1980s	Coupling model	Emphasis on integrating R&D and marketing
1980/90s	Interactive model	Combinations of push and pull
1990s	Architectural innovation	Recognition of the role of firm embedded knowledge in influencing innovation
1990s	Network model	Emphasis on knowledge accumulation and external linkages
2000s	Open Innovation	Emphasis on further externalization of the innovation processes in terms of linkages with knowledge inputs and collaboration to exploit knowledge outputs

Salant (1989) emphasized on the role of management during crisis to present a better understanding for policy makers. Mytelka *et al.* (2001) mentioned four main dimensions of policy instruments: "First, the technological capabilities of the societies are essentially defined by the knowledge frontier… Second, knowledge which is relevant for industrial production… Third, the transition process is basically sequential… Fourth, the approach is technocratic, in the sense that it views technological change broadly in terms of engineering devel-

opment processes and hardware creation." These mentioned dimentions above presents fundamental understanding on policy instruments which should be emphasized. They also focus on seven results that are strongly confirmed by extensively applicable empirical research and data across industries and countries (see Table 1.4).

Table 1.4. Results and implication for research and technological development (RTD) and innovation policies (Lynn. k, Mytelka, Smith, 2001)

Stages	Results and Implications
First	"Innovation is not something that happens only in a relatively small group of high technology industries, or something that is driven by small set of industries or technologies".
Second	"Firms invest in a wide range of innovation inputs, including training, prototyping, acquisition of capital goods, design development, market research and so on".
Third	"Firms very rarely innovate without technological cooperation or collaboration. Knowledge creation happens through an interactive process with other firms, organizations, and science and technology infrastructure and so on".
Fourth	"Innovation involves serious uncertainty, both in technological and in economic terms. It has been rarely possible to predict the path of innovation, even in general terms. It I rarely possible to predict the economic outcomes for new products or processes"
Fifth	"Clustering appear central to competitive advantage, a result that has emerged from a wide variety of studies. 'Horizontal' clusters meaning group of firms in the same line of business- are widely distributed, and seem to be associated with better economic performance of firm in the cluster. Vertical clusters, meaning sustained relationships between firms in different activities, can be identified using input-output techniques, and reflect country specializations that often differ widely".
Sixth	"One of the most persistent themes in modern innovation studies is the idea that innovation by firms cannot be understood purely in terms of independent decision making at the level of the firm"
Seventh	"The science system does not provide the raw material for innovation in any simple way, it remains the key element of industry knowledge bases across the company"

The innovation Paradigm was taken on in depth by the European Commission, OECD and UNCTAD during 1980's and 1990's. This process took many efforts and knowledge investment where social sciences played a very important role. On the one hand, statistical data collected by the OECD and the European Union, and research and technology development programmes were improving step by step to force the impacts from innovation theories. On the other hand, the

country level was reviewed by UNCTAD and OECD to provide reports to deal with employment, productivity and growth changes and its demands.

The main report document was 'Technical Changes and Economic Policy' which was the main policy report for macroeconomic reflection of the 1970's depression and the importance of technological indicators for the solution of crises (OECD, 1971). In general, the document focused on the impact of technological changes, for instance, the diffusion of electronics along other service and manufacturing industries in the economy, where the effect of technology on innovation was almost ubiquitous (OECD, 1980). With this approach to social, economic and technological changes 'social, technological and economic process should be viewed in dynamic terms' (OECD, Sundquist Report, 1988). This report was the background for the Technology Economy Programme (TEP). It was the venture in Directorate for Science Technology and Industry of the OECD. The TEP programme was based on a series of workshops, data development exercises and conferences for sustainable and efficient report production. The TEP programme included the Oslo Manual, which was harmonized on the Kline-Rosenberg innovation model in nature, and which tried to enlarge the lineal measure of innovation and non-Research Development inputs (OECD, 1992a). TEP's last reports included new approaches such as Technology and Economy (The Key Relationship which Kline-Rosenberg model was used as an analytical framework) (OECD, 1992b). On the other hand, the report was the framework for the national innovation system (Lundvall, 1992).

According to OECD Reports (1998), Technology and innovation diffusion policies attempt to be fragmentary, with lack of consideration on the connections within national innovation systems. But their residues, presented knowledge for UNCTAD in the frame of Science, technology and Innovation Policy (STPI) were collected within national innovation systems concept (UNCTAD, 1999a, 1999b). In the early 1980's industrial, research and development policy took place among the European commission directorates (Guzetti, 1995). Research and Technology Development (RTD) programs, during the primary and secondary framework attempt, were formulated more for competitiveness than innovation. This contained ESPRIT (European Strategic Program for Research and Development on Information Technologies) program as well, where the core approach was to develop European standards and to support European industries with the required basic technologies, and also the BRITE (Basic Research in Industrial Technologies) program, which was developed to support the European manufacturing industry in taking more competitive stance against global changes (EC, 1987). By the late 1990's, RTD initiatives containing COMETT (Community Program in Education and Training for Technology) and the ESPRIT program action route were working on accomplishing competitiveness by pushing the supply of technology and research skills.

In this context, taking into consideration the role of innovation on social and economic development and its positive force on prosperity level, the need of innovation and its use under the conditions of enlargement of the EU should be strongly discussed:

The influence of the European Union with its economic and social components on technological, economic and social development in the world is progressively growing (Friedman, 2005). According to Hofbauer (2003), the role of the European Union on social, economic and technological in the global system is increasingly growing. The social and economic system of the European Union is accepted widely as a model for sustainable economic development by a respectable number of countries around the world. The European Union economic policy and its social, technological and economic performance are observed cautiously by other countries. The Union's development plans and programs such as the Lisbon strategy, Europe 2020 are followed by other developing states in the world. According to Boldrin and Canova (2001), the technological, economic and social changes in the world are progressively growing with the influence of the social and economic systems of the European Union. Moreover, Atamer, Calori and Nunesw (1999), point out the effective influence of the social and economic system of the European Union in the world. Furthermore, Redding and Venables (2004) highlighted the importance of social and economic system and technological changes in European Union and its role in the world. According to Melnikas 2002, innovation potency in the European Union can be described as an entire capacity of the Union as a system to disseminate and fulfil various economic, social and technological innovations needed for responding to new challenges and requirements under the conditions of globalization. Future development programs of the European Union widely connect on its innovation capacity, hence, the understanding of the innovation potency and prospects are fundament for determining and solving important economic, technological and social issues (Foray, David, 2002). Steinmueller (2002), Point out that solution of the European Union's issues and obstacles depend on the innovation potential of the bloc. He highlights the importance of innovation for identifying and solving social, economic and technological development issues. Furthermore, regarding Cohendet and Stojak (2005), innovation potential is a significant component for the prospects of sustainable development of the Union. Moreover, he continues to state that the innovation potential of the European Union is a gear for the solutions to problems related to technological, economic and social issues.

According to Melnikas (2008), the prospects of economic development are becoming more heavily dependent on the ability to disseminate and implement innovations in all spheres of life. This factor is of particular importance for the development and expansion of the European Union because the activation of

innovations is considered to be a significant problem associated with social and economic development and the advance of science and technology within the group Further activation of innovations is a major precondition for ensuring the competitiveness of the European economy under the conditions of globalization. To activate innovations in the European Union, the potential of such innovations should be purposefully developed and effectively used. The problems of purposeful development and effective use of innovation potential are considered to be particularly important both from theoretical and practical perspectives. Taking into consideration all these factors, the European Union's action and development plans (Lisbon strategy and Europe 2020) are based on growth theories which are fundamentally based on innovation. The aim of the programs is economic reform and social cohesion as part of a competitive and dynamic knowledge-based economy. The main subjects were social, economic and environmental renewal and sustainability, Innovation was accepted as the motor of economic change (Lisbon European Council, 2000).

The Lisbon Strategy was based on the work of key thinkers such as Joseph Schumpeter, Lundvall, Christopher Freeman, Richard Nelson, Luc Soete and Giovanni Dosi. The program is based on and strongly influenced by Neo-Schumpeterian and Evolutionary Economics, which is forwarding parallel with changes in the world and present us strong scientific approaches to analyze European economies and enterprises by presenting the qualitative transformation of economies and entrepreneurship into the core of sustainable growth (Hanusch and Pyka, 2007a). Innovation economists such as Christopher Freeman and B. Lundvall as well as researchers from the Maastricht Economic Research Institute on Innovation and Technology have a very strong influence on policy papers of the European Union. According to the Commission of the European Council, innovation is the main approach behind the Lisbon Strategy:

Innovation is the key to tackling the main challenges we face now, such as Climate change, congestion, social exclusion, detection and prevention of diseases and insecurity. Europe Should work more to harness its creative power and ability to convert knowledge into high Quality services, Products and new business models for which there is a strong global demand. Progress of innovation will be central base to the success of the renewed Lisbon Strategy for Growth and Jobs (Commission of the European Council, 2006).

Essentially, the main components of the Lisbon strategy which are innovation, knowledge and socioeconomic setup, are able to support entrepreneurship, business potential and innovation activities. Neo-Schumpeterian and Innovation Economics are presenting the best theoretical approaches in order to perceive global challenges affected by the tise of New Economies and globalization (Fagerberg *et al.,* 2005). According to Hanusch and Pyka (2007b), theoretical approaches such as Neo-Schumpeterian and Innovation Economics point out the

role of innovation and entrepreneurship for economic development. Therefore, it is not surprising that a Neo-Schumpeterian approach like Innovation Systems is of great importance for policy makers and growth.

In summary, the significant role of innovation is accepted by all scholars in social and economic development. In this context, CEE countries had to develop sustainable innovation policies in order to improve their innovation support system and innovation activities, and thus, CEE countries had good practices and have gained significant experience that can be presented as a lesson for CPC countries. This topic will be discussed in depth in the next section.

1.3. The Needs of International Transfer of the Good Practices of Innovation Management under Conditions of European Integration: General Priorities and Specifics in the Case of the Central-East and South-East European Countries

To begin with, the significant role of public innovation support systems development in the CEE economic area will be discussed. Furthermore, the application of modern innovation theories and models for the effectiveness assessment of public innovation support will be elaborated on. And finally, the experience and good practices of CEE countries in policy making process and innovation management will be presented. In addition, the question, why transfer of good practices and experience should be seen as the priority of the development process will be clarified.

The stress on the public innovation support system is affected by the influence of innovation phenomena that effectively support GDP and contribute to significant emerging socioeconomic challenges. Important scientific studies have been made to disclose the benefits of effective public innovation support measures and display the necessity of innovation in the CEE economic area. Taking these facts into account, the role of conceptual models in public innovation support fostering innovation in business (Barrett, Hill 1984; Braczyk, Cooke, Heidenreich 1998; Miles 2004; Earl 2004; Tan 2004; Melnikas 2005); the provision of innovation support services with other public measures (Andersen 2002; Kox, Lejour 2006; Lundvall, Johnson, Mackay 2007); the organization of institutional forms for public innovation support (Fung, Wright 2001; Gavin, Muers 2002; MacPherson 2001; Straits 2002; Sherwood 2002; Minogue 2005); and the public sector as a main developer of innovations. The paradigm of full governmental involvement for the generation and dissemination of inno-

vation (Bhatta 2003; Cainelli, Evangelista, Savona 2004) is the main research area in the field of innovation support systems.

According to various scientific approaches, public innovation support can be explained as a process which is designed, organized, implemented and audited by public or private institutions under the public interest with the purpose to support innovation in all feasible fields (Miravete, Pern 2000; Cassiman, Veugelers 2002; Blake, Hanson 2005; Blindenbach 2006 ;Beerepoot 2007). In agreement with neoclassical approaches, the debate on public intervention is strongly engaged to the concept of optimality. The public sector should present solutions to market issues that obstruct achieving the optimal development of innovation (Bator 1958; Mankiw *et al.* 2002; Medema 2004; Mohnen, *et al.* 2004). Under this paradigm the rationale for public innovation support is based on identification, analysis and elimination of systemic problems (Edquist 2001; Nelson 2002; Heidenreich 2004; Juma, Yee-Cheong 2005; Hassink, Dong-Ho 2005; Chaminade, Edquist 2006; Lundvall 2007).

Systematically speaking, the Baltic countries have similar innovation infrastructure. The innovation support system has the same technical background from Soviet times, developed by the Baltic countries after independency, during the accession process to the EU and after membership was achieved. It is possible to observe a very similar innovation infrastructure between SEE countries. All in all, in order to compare the differences between regional innovation support systems, Lithuania (First: Republic of Lithuania is the country where the dissertation is presented; Second: The easy Access to the necessary official documents of the Republic of Lithuania for the author) was selected as representative of Baltic States and Albania (lowest innovation performance among SEE countries) as representative of SEE countries. This comparison is very important in order to evaluate and observe the lack of institutional involvement (key actors, institutions, ministries, etc.) in SEE region (see Annex A). The main difference can be seen as lack of involvement in the level of public governance in innovation support system of SEE countries. In general, key ministries in the Baltic States actively take part in innovation activities; however, SEE countries do not show that kind of involvement. Furthermore, the lack of interaction between key institutions and key actors in SEE countries can be seen as serious problem in the region.

In this context, essentially good practices and progressive experiences of innovation activities in CEE in order to present lessons for CPC countries in the context of enlargement of the EU should be discussed. Moreover, this discussion will lead a general understanding on how CEE countries developed their innovation infrastructure and innovation management capability.

In defining the development of innovation policies in CEE states, two main tendencies should be highlighted:

To begin with, according to Radosevic (2009), a rapid development and re-organization of the economies, the role of Washington consensus and also the importance of policies on attracting FDI and macro-economic stability during the 1990's must be discussed. Furthermore, the development of the ICT-based techno-economic paradigm in the region should not be neglected. Taking into account the circumstances described above, according to Mickiewicz and Radosevic (2001), innovation policy was held in the second plan in comparison to transition-related concerns during economic circumstances in this period. From a policy point of view, it is important to highlight the confidence on macro-economic ability and that management is limited to ensure experience (Okimoto, 1990). Moreover, structural development, which depends on the productivity benefits from the tiring adjustment processes regarding to employment and fee levels and from FDI-accounted skills of production capabilities, remains limited in terms of the need of innovation policies and the increment of the policy-making capacity as well (Havlik 2007; Radosevic 2006; Kattel 2010; Radosevic 2011; Tiits *et al.* 2008; Kubielas 2009). There have been considerable changes in innovation policies with the push of European Union integration process in the CEE region. According to Tunzelmann and Nassehi (2004), priorities on the high-tech sector and the focus on linear innovation can be seen as the main policy change. It is important to emphasize the EIPR report 2008 to see the main progress of innovation policies in the EU. The innovation policies arising in CEE reflects similarities with the "European paradox", from point of view of the older member countries (Dosi *et al.* 2006). Kranich (2008) argue s that the nugatory effect of the policy transfer has been reinforced by the so-called "Eastern European paradox".

Innovation policy was vital for CEE countries especially for Baltics during the accession process and that it plays a key role in socio-economic development in the region. This approach is one of the most important focus points for the thesis. Europeanization had significant influence on the development of long-term innovation strategies and policies as well as R&D, national development strategies and EU's Lisbon strategy (EIPR, 2006). According to Torok (2008), there have been notable changes which have not been discussed publicly, in innovation, industry and also in economics in CEE states since joining the EU. Hereby, innovation has significant energy on adaptation in European single market norms and also on the modernization of industries in the CEE region (Kaiser and Kripp, 2010; Havlik. 2005). Local conditions in the CEE region have a significant impact on innovation policies. According to Piech and Radosevic (2006), "high-technology developments" reflects inconsistency among the current economic structure and the set priorities. According to Kettel (2010), "… even if high technology exports have been growing in developing countries, this does not mean that we deal with similarly dynamic sectors with significant

increasing returns". Nevertheless, the innovation policies in CEE have shaped with EU policy together with focusing on research and development priorities (EIPR 2009, Havas 2006). Furthermore, Radosevic (2011) emphasized that, the main structural issues in CEE countries have been caused by an inefficient business enterprise sector and weak local demand for R&D. In addition, an inconsistency among various sectors in the CEE was found (Kubielas 2009). The main issues occurred due to low R&D investment (Eurostat 2008). In order to solve these problems, Lundvall 2010 argued that "… innovation must be rooted in the prevailing economic structure".

The strong role of EU funds on innovation activities can not be neglected. It should be emphasized that the innovation policy in CEE states has been touched by EU funding and its administrative understanding. This approach is based on INNO-Policy TrendChart state reports (EIPR 2008, EIPR 2009, country reports 2007) which disclose that the application of an extensive area of innovation support measures has been relying largely on European Union funds and achievements in innovation policy the R&D in many CEE countries. In order to solve innovation policy issues, as defined above, innovation policies in CEE are usually weakly related to local circumstances. Many of the issues have been emphasized in EU strategic reports, starting with the reviews of the implementation of the PHARE program as the EU's main financial instrument during the 1990s, but remain crucial and unresolved until today (European Council 1999). As EU structural funds create a chance for the CEE states in terms of human resources and ICT investments, the borders of the system must be acknowledged as well.

Nearly all issues in the field of innovation policy in the CEE region are related to weak actors and the nonfunctional policymaking system, causing significant coordination issues in policy design and application together with weak policy appraisal, assessment, policy-learning and monitoring systems (Radosevic 2002a). According to Lundvall *et al.* (2009), "innovation policy" needs to be anchored not in one single ministry but rather at the very top of the government and in strategic bodies aiming at building sustained learning at all levels of the economy,". This type of weak policy-making mechanism has resulted in a deficiency of collaboration among various innovation-related actors and activities such as research government, organisations, key institutions and industry (INNO-Policy, Country reports 2007).

If we look deeply into the experiences and good practices of CEE countries in innovation management, analyzing CEE states practices and experiences in developing and implementing innovation policy, it refers to a deficiency of specific prerequisites and infrastructure for development in that area (Lundvall 2007). According to Radosevic 2009, in order to analyze industrial policy it is important to point to the necessity to focus on obtaining the right policy process. Although having a reasonable plan takes important place on innovation policy

making, the main focus should be on efficient system involvement (Nelson 2006a). According to Perez (1986) "A successful strategy in one country cannot be transferred to another". Furthermore, Lundvall (2007) argue on policy learning that, "Policy making itself is a process of learning. The goals, the instruments, the models, the data, the competence of the bureaucray, the organizations and the institutions develop over time in interaction with each other and not least with the experience and feed-back from implementing specific policies."

The question of how development occurs in the CEE region should be addressed. The beginning of the argumentation is based on a neoclassical approach regarding the role of investment in productive potential on innovation competency (Bell and Pavitt 1993). According to Lundvall *et al.* (2009), institutional regulations and instruments for achievement are context-specific and diverge from Western ideals.

The roles of the educational and scientific structure consider the use of existing technology potential for development as an unquestionably significant feature (Verspagen 1991, Reinert 1999, Perez 2001). Radosevic (2009) mentioned that the progress of CEE states has been extremely confined to the outcome-based framework of the policy-making mechanism. The European Union's annual reports are significantly bonded to the structural funds' programming context touching on the necessity to have certain purposes for the development, containing issues such as competitiveness, innovation and research (EIPR 2009). The key hypothesis is that this type of policymaking mechanism needs the elements and inputs for innovation and economic policies (Lundvall 2010). Moreover, especially since 2000, the notion of systems of innovation has risen as a feature in building and implementing innovation policies in CEE (INNO-Policy Trendchart country reports, Soete 2007). According to Dobrinsky (2009), the perspective focus on an extensive area of assorted structural elements has provided a way for state intervention potentiality in terms of policy intervention. Actually, the mentioned transformation has become a discrepancy for transition countries in general, as is the case in CEE (Fagerberg and Srholec 2008, Veugelers and Mrak 2009). There is a disconnection among the general trends and various contextual needs in both developing and advanced countries, but while the former group performs broader economic, social and organizational integration of new technologies, the latter faced more technology policy in traditional industrial and science (Freeman and Soete 2009).

The situation in the CEE countries is suppressed by the lack of experience in using different industrial policy instruments (Török 2007). "Industrial policy may change over time and across individual companies" (Okimoto 1990). As industrial development is getting progressively complicated and dynamic, with general characteristics of innovative technologies touching occurrence of comprehend gaps for industries, innovation, business models etc., the concept of

systems of innovation is not satisfactory in presenting principles for context-specific policy-making. In various works, Perez argued that the deepest under-standings dedicated to technical change is combined with socio-institutional and economic aspects. Furthermore emphasis was placed on the nexus between mastering technology and development (Perez, 2002, 2004, 2010b). There is a need for technology-cycled-based development in developing countries in order to advance industry, and this "windows of opportunity" also applies to CEE countries (Phaal *et al.* 2011). The understanding of the relation and nexus between technological development and policy framework, and their interaction with socio-institutional circumstances remain core methodological problems for the future (Kattel 2009).

The necessity of a strong innovation support system, the use of innovation under conditions of enlargement in the EU, and the experiences of the CEE countries in innovation management in order to serve as example for SEE countries has been strongly debated. However, a significant question arises – why experience transfer should be seen as the priority for development.

To begin with, many researchers point to experience transfer as a key force of organizational interconnectedness. In fact, some emphasize on experience transfer as the foundation for a rapidly developing network form of organization (Powell *et al.* 1996, Baker 1993). As organizations gain experience they become stronger, which harms their competitors (Barnett and Hansen 1996, Henderson and Cockburn 1996). Some important studies emphasize on the link between an organization's experience and its performance (Yelle 1979, Argote 1999). According to Paul Ingram and Tal Simons (2002), Studies that use more comprehensive measures of organizational performance, such as failure rates or profitability, may examine the implications of both learning about effective production and learning about market. This is an advantage of presenting a wide picture of the impact of experience on performance.

Some studies, such as, Hamel (1991) and Powell (1996) focus on assorted forms of strategic alliances as mechanisms of knowledge transfer. Many organizations have improved their performance through experience transfer from others (Darr *et al.* 1995, Baum and Ingram 1998, Darr and Kurtzburg 2000). All in all, taking into consideration all the significant approaches on experience transfer, it is important to emphasize the necessity of the transfer of positive experiences in innovation management as crucial for SEE countries.

According to Darr *et al.* (1995) and Grindley *et al.* (1994), Organizations build opportunities for experience transfer by introducing the members of organizations to task-oriented and social based purposes. Ingram and Simons (2002) point out that in order to find matching solutions to problems, interaction between members of one organization with problems, and members of another with solutions is a significant step. The necessity of interpersonal communica-

tion is presented in Almeida and Kogut's (1999) research on the regional varia-
tion of innovation in the U.S. semiconductor industry. In short, connecting an
individual with knowledge to the flow of information between two organizations
greatly reinforces experience transfer between them. The same interpersonal
contact should be created between key institutions, organizations and persons in
the CEE and SEE regions in order to improve the innovation management capa-
bilities of candidate states under conditions of enlargement of the EU. Experi-
ence could also be transferred between societies, not only from CEE to SEE but
also vice versa. It is important to point out that the development of cultural ties
can provide better communication in order to integrate the positive experiences
of innovation management. For example, regular communication between aca-
demics, seminars for businesses, exchange programmes for key persons, factual
interaction between innovation centers, etc., can be a way of transfering experi-
ence from CEE to SEE countries. Co-membership in the key institutions can
also be seen as an effective way, as it creates an informal channel for the transfer
of experience. Furthermore, motivation has a significant role to play in the trans-
fer of experience. According to Ingram and Simons (2002), motivation is a sig-
nificant factor because transferring experience needs time and effort or even
financial support. The role of adaptation should be counted in the process of
experience transfer. It has direct effect on the efficiency and reliability of the
experience transfer (Talmon, 1972).

Taking into account the approaches above, it is also important to focus on
the necessity to create capacity for a successful experience transfer. This is a
point that should be effectively provided by institutions or any other organiza-
tions in order to have an accomplished experience implementation from one to
another. Organizational experience is formed through know-how and infor-
mation. The latter is more attainable to other organizations than know-how be-
cause communicating it does not require a language which may depend on a
high level of common knowledge, both technical and organizational, between
the firms, as is the case with know-how (Kogut and Zander, 1992). Levinthal
and March (1993) argue that information without linked know-how can be
pointless for organizations attempting to implement experience because of the
complex relationship between organizational actions and outcomes. Organiza-
tions may also have a higher background of mutual motivation, which will also
relieve the effective transfer of experience. Moreover, they need a level of infra-
structure – known as absorptive capacity – to well-absorb knowledge from other
organizations (Levinthal and Cohen, 1990).

The most important point to be emphasized in this section is to present a
general overview on innovation infrastructure in CEE and to answer the signifi-
cant question of how CEE countries developed their innovation infrastructure
and innovation management capability, which can be seen as a lesson for SEE

countries. Moreover, the section provides a general perspective for an international transfer model of good practices in innovation management which will be presented in the next chapter.

1.4. Conclusions of the 1ˢᵗ Chapter and Formulation of Dissertation Objectives

After examining the necessity for scientific research in the field of enlargement of the EU, innovation, innovation management, innovation support system, good practices the progressive experience of the innovations; the following conclusions can be made:

1. A comparative analysis of various theoretical approaches on Innovation, Innovation management and innovation support systems in this chapter point out the necessity to focus on transfer of good practices and experience in innovation management from CEE in order to cope with integration problems that SEE countries face during their accession process. Moreover, a deep theoretical study addresses the necessity to provide a theoretical model in order to cope with integration issues, in which the transfer process of good practices and experience are identified.

2. The assessment of the recent documents on this topic has helped verify that the fundamental focus should be the socio-economic diversity of the states, and the need of innovation to foster this diversity.

3. The research on existing documents presents processes of innovation activities at EU levels in which member and candidate countries should make an effort to cooperate in innovation activities in more factual way.

4. The examination of the theoretical approaches related to innovation and European Union enlargement and the nexus between innovation, socio-economic development and EU accession process foster the solution of integration issues in SEE region.

5. Taking into consideration the problems awaiting immediate solutions related to innovation management, the transfer of good practices and experience is the driving force to foresee future issues and minimize the failure in innovation activities in the context of accession processes.

6. Upon examination of the documents, three components must be emphasized: 1) socio-economic integration; 2) financial development 3) innovation policy.

7. Upon assessing the key external factors for the European Union, the following should be considered: 1) changes in politics; 2) social changes and security needs; 3) changes in the economy; 4) changes in technology; 5) cultural factors.

8. The necessity of higher innovation performance in innovation activities in order to respond to social and economic challenges poises the need for an international transfer model of good practices in innovation management. The model should deal with assessing the lack of institutional involvement at the innovation support system level, the assessment of the progressive experiences and good practices in innovation management in CEE countries in each social and economic sector; and the assessment of the need of innovation in SEE countries in order to provide strategic insights for experience and good practices transfer processes which should be performed in empirical research.

2

Prospective Theoretical Model and Methodology of the Empirical Research

This chapter examines and explains the International Transfer Model of Good Practices in Innovation Management (ITMGPIM) in detail. The suggested model deals with the assessment of the lack of institutional involvement at the innovation support system level; the assessment of the progressive experiences and good practices in innovation management in CEE countries in each social and economic sector; and the assessment of the needs of innovation in SEE countries in order to provide strategic insights for transfer process, taking into account structural components and their impact on social and economic development under the conditions of the European integration. The results of this chapter can be found in author's publication Peyravi (2016).

2.1. Prospective Theoretical Model of International Transfer of Good Practices of Innovation Management

The literature review discussed the scientific problem in-depth and pointed out the necessity for an International Transfer Model of Good Practices in Innovation Management. This section aims to give a general overview of the ITMG-PIM and also present a description of the methodology and the structure of the empirical research in successive parts. The main purpose of the model is to create a system with proposing elements and links in order to assess the needs of innovation activities in each social and economic sector in SEE countries and the necessity to transfer the progressive experience and good practices of innovation management from CEE. In this case, the model aims to be adapted to all possible candidate countries as well. The Model (ITMGPIM) consists of following stages (see Figure 2.1).

Firstly, stage one aims to evaluate the innovation infrastructure in CEE in order to point out the structure of the Innovation support system, the mission of the key actors, the involvement of the key institutions and their missions, and to provide a general understanding of the interaction between the different elements. Secondly, to assess the progressive experiences and good practices in innovation management in CEE countries in each social and economic sector. And, thirdly, to analyze the social and economic development in CEE and its nexus with innovation performance in order to provide data to assess the period of transformation of innovation activities to social and economic benefit.

The second stage aims to evaluate the lack of institutional involvement in innovation support system in SEE countries. Moreover, this stage aims to assess the needs of innovation activities in each social and economic sector in SEE countries and the necessity to transfer the progressive experience and good practices of innovation management from CEE. The nexus between innovation performance and social and economic development in SEE is analyzed in this stage.

The third stage provides strategic insights for experience transfer process, taking into the account structural components and their impacts on social and economic development under the conditions of the enlargement of EU.).

The aim of the model should be seen in two ways:

1. The purposed model should be implemented in SEE countries seeking to develop innovation performance, achievements in innovation activities touching the needs of a strong innovation support system and the necessity to use the progressive experiences and good practices of the Baltic countries in innovation management.
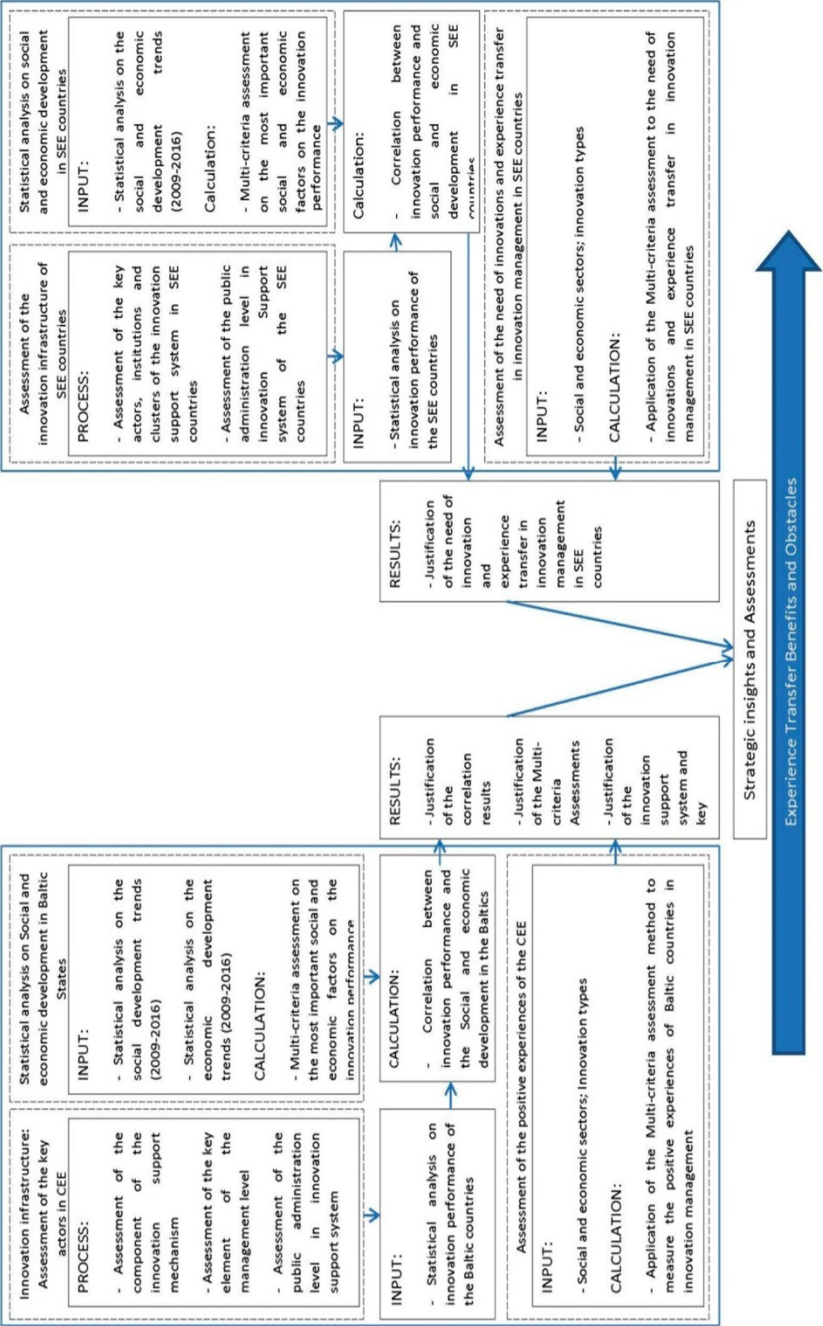
Fig. 2.1. International transfer model of good practices in innovation management
Source: Prepared by author

2. The model should be accepted as an instrument to facilitate the socio-economic integration with understanding the needs of innovation in the context of enlargement of the European Union.

The model leans on the idea of strategic decision making, as well as the necessity to adopt these decisions to finalize certain processes and ensure the efficient application of the adopted solutions. The Multi-criteria assessment method is used to assess the experience and good practices of CEE countries in innovation management and the needs of innovation in SEE countries both in the social and economic sectors. The previous experience and good practices of the Baltic countries formed the current innovation support system after becoming members of the EU. The interactions between public governance mechanisms and partner institutions have formed the network structure. The suggested insights will touch future interactions with involving new approaches and specific actors, and take place in a particular context. It also explains why the ITMGPIM model is needed in order to prove the need to transfer of the progressive experiences and good practices of CEE countries to ease the pressure of integration challenges from the EU side, and also to provide extra strength to compete in the common market upon accession.

The proposed model can be considered as methodological and theoretical basis for the development of innovation activities and innovation performance in SEE region. This model is recommended not only for SEE, but also for current and future candidate countries to the European Union.

2.2. Methodology of the Empirical Research on International Transfer of Good Practices of Innovation Management

The research methodology was suggested in order to assess in depth the policies in innovation support system and their effect on innovation performance, together with the social and economic development in the CEE and SEE regions, the need of innovation and the possibilities to transfer good practices in innovation management from CEE to SEE. A review of techniques for international transfer of good practices has been conducted by analysis scientific material, primary and secondary data analysis, comparative analysis of statistical data, multi-criteria assessment, expert surveys, and correlation analysis methods. Research methodologies include qualitative and quantitative methods. The research was performed in several ways. A detailed comparative analysis on innovation infrastructure was carried out to highlight the lack of institutional involvement and examine the harmony among innovation support system institutions, ministries, key actors, etc. Furthermore, the necessity of strong interaction between key

elements has been emphasized. The comparative statistical analysis examines the needs of innovation in SEE region, including the classification of managerial level of innovation. Moreover, the social and economic development in CEE region and SEE has been analyzed. Statistical correlation has been used to highlight the development of innovation performance of the Baltic States and its role on social and economic development. Relevant documents were reviewed to expose the innovation infrastructure of the CEE countries, especially the Baltic States, and also SEE countries according their innovation performance.

The Multi-criteria Assessment deals with following issues:

- The ability to expose the most important social and economic factors on innovation performance.
- The ability to assess the progressive experience and good practices of CEE countries in innovation management in both the social and economic sectors.
- The ability to assess the lack of management experience in SEE countries in innovation activities for each social and economic sector.
- The ability to provide quantitative criteria for strategic measures.

The Multi-criteria Methodology:

- Scientific publications are a demonstration of the presented empirical and theoretical research. Accomplished researches may contain multidisciplinary components, knowledge transfer or common aim. These emphasized indicators reflect indirect sequels of inter-organizational activities effort by key actors. The output of the scientific research has indicated as the most common measurement. The output of the many scholarly researches published in scientific journals displays the capability of an institution to deliver scientific knowledge. Output importance is influenced by institution capacity and research profiles, among others elements. The output indicator shapes the base for more complex research. For the composition and evaluating variant criteria, multi-criteria assessment methods have been selected. In recent years, multi-criteria methods have been increasingly used for quantitative evaluation of complicated economic or social processes (Ginevicius, Podvezko 2004; Figueira *et al.* 2005; Zavadskas *et al.* 2007a, b; Ustinovichius *et al.* 2007; Ginevicius 2008; Liaudanskiene *et al.* 2009; Plebankiewicz 2009; Podvezko 2007, 2009; Turskis *et al.* 2009; Urbanavicienė *et al.* 2009 a,b; Zavadskas, Vaidogas 2008; Zavrl *et al.* 2009; Podvezko, Podviezko 2010).

The essence of the method is that the experts analyze a problem logically, quantitatively assess and attentively process the data. The rate of opinion compliance is detected according to the experts' assessment and their objectivity is

approved. The surveys assist in constructing scientific concepts imminent to scientific objectivity.

The experts' opinions are usually different and may be contradictory. It is essential to evaluate their degree of suitability, and for this reason the method of multiple criteria is in use. The relevance of two experts may express by correlation coefficient instead of bigger number of experts the degree coefficient. In case of bigger amount of experts the degree of compatibility may be expressed by concordance coefficient (W). The Results of the evaluation may apply in practice, in case the rate of suitability of the experts' assessments is high enough. The results may be described with concordance coefficient, which is calculated by the ranging of comparing objects (opinions). The method builds nexus between expert evaluation with good practices and experiences of the CEE countries in order to assess the good ptactices and with parallel the needs of innovation which is important for illustration of situation in SEE region.

Ranging is a process where the most significant index receives a range equal 1, second regarding the importance of range 2, etc., the last one – range (m). Equivalent indexes receive the same range – arithmetical average of both ranges. The idea of Dispersion Concordance Coefficient is related to the sum of range of each index comparing with the range of all experts:

$$c_i = \sum_{j=1}^{r} c_{ij}, \left(i = 1,....., m\right).$$ (2.1)

It is expressed by deviation of comparing to average value $\bar{c}$ and S (dispersion):

$$S = \sum_{i=1}^{m} \left(c_i - \bar{c}\right)^2.$$ (2.2)

Average value $\bar{c}$ is calculated by the formula:

$$\bar{c} = \frac{\sum_{i=1}^{m} c_i}{m} = \frac{\sum_{i=1}^{m} \sum_{j=1}^{r} c_{ij}}{m}.$$ (2.3)

If experts assess all indexes equally, the most important index would have range equal 1 and the sum of index ranges would be equal r, second regarding importance index – $2r$, and etc., the last index – mr. This is the example of ideal degree of compatibility. In this case, dispersion would have maximal possible value:

$$S_{\max} = \sum_{i=1}^{m} \left(ri - \frac{1}{2}r\left(m+1\right)\right)^2 = \frac{r^2 m\left(m^2 - 1\right)}{12}.$$ (2.4)

Concordance coefficient is the ratio of dispersion and it maximum value of S_{max}:

$$W = \frac{12S}{r^2 m \left(m^2 - 1\right)}.$$ (2.5)

In case of compatible experts opinions, the value of concordance coefficient W is near 1, if the value differ, W near 0.

Concordance coefficient may be in use in practice by assessing limiting value, which shows, that expert's opinion may be considered as compatible. The number of objects $m > 7$, significance of concordance coefficient may be expressed by:

$$x^2 = Wr\left(m-1\right) = \frac{12S}{rm(m+1)},$$ (2.6)

here $x^2 > x_{kr}^2$ – Experts opinions are compatible; SAW – Simple Additive Weighting Method.

By choosing optimal opinion we have to perform multiple data analysis. We have to calculate the sum of all indexes with the weights Sj for each $j – m$ object:

$$Sj = \sum_{i=1}^{m} \omega_i \, \tilde{r}_{ij} ,$$ (2.7)

here ω_i – weight of i – index; $\tilde{r}_{ij}$ – value of i – index for j – object with the weight

$$\tilde{r}_{ij} = \frac{r_{ij}}{\sum_{j=1}^{n} r_{ij}}.$$ (2.8)

The biggest value of Sj shows the opinion of certain expert, who optimal expresses opinion of all experts.

The Correlation Coefficient:

A correlation coefficient calculates the direction and potency of a linear nexus between two variables. It ranges from –1 to +1. The stronger the relationship is to closer the absolute value to 1. A correlation of zero indicates that there is no linear relationship between the variables. Possibly the coefficient can be negative or positive. The scatterplots indicate two linear relations of the same strength but opposite directions.

The main functionalities of method are providing data to assess the following questions:

- Is there a relationship between two variables?
- If yes, can this relationship be represented by the equation?
- Can the equation be used for Predictions?

Assumptions:

- (x, y) sample of the binary data
- distributions of x and y are normal

Scattering diagram is a graph, which shows horizontal axis as x and vertical axis as y.

While a perfect correlation is easy to decipher, it is difficult to guess the coefficient of weaker correlations. That is why a precise mathematical measure of correlation known as Pearson's is developed. For those interested in knowing how the correlation coefficients are actually calculated, the steps are outlined below:

$$r = \frac{a}{w}, \tag{2.9}$$

where: $a = n\sum xy - (\sum x)(\sum y)$ and $w = h^{\frac{1}{2}}k^{\frac{1}{2}}$ with $h = n(\sum x^2) - (\sum x)^2$ and $k = n(\sum y^2) - (\sum y)^2$.

Features of the Correlation Coefficient:

- $-1 > r > +1$;
- For the perfect positive linear relationship, $r = 1$;
- For the perfect negative linear relationship, $r = -1$;
- If there is no linear relationship, $r = 0$.

The hypothesis can be tested with a t statistic:

$$t = \frac{r_{xy}\sqrt{n-2}}{\sqrt{1-r_{xy}^2}}. \tag{2.10}$$

Under the null hypothesis, the t statistic has degrees of freedom.

It is very important to build target-based and strong empirical research. The structure of the empirical research is based on the object of the thesis with the use of indicated methodologies. The empirical research structured as follow:

1) Statistical analysis on innovation performance and socio-economic development in SEE and Baltic Countries.

The object of the research is to provide understanding between Baltic countries and SEE countries regarding their domestic dynamics in social and economic development and innovation performance. Furthermore, the research aims to observe the nexus between innovation performance and socio-economic development in Baltic countries and SEE countries

The benefit of the research is to build bridge between Baltic countries and SEE countries in order to match the availability of the dynamics for the transfer of good practices and experience.

2) Expert evaluation on positive experiences of innovation activities in the Baltic countries, the needs of innovation in SEE and possibilities of the transfer of positive experiences of innovation activities from Baltics to the SEE countries.

The object of the research is to obtain data on the good practices of Baltic countries in innovation management in each social and economic sector. Furthermore, the research will provide strong data on the need of innovation and innovation management in each social and economic sector in SEE countries.

The benefit of the research is to match the innovation management in each social and economic sectors in Baltic countries and SEE countries in order to observe priority of the transfer process and to provide general overview for the decision making process.

In further chapters, there is a necessity to perform empirical research in order to test the model. The research should approve that the presented model is correct and has theoretical and practical background. The results of the research should be a tool for developing advanced strategic decisions.

2.3. Conclusions of the 2nd Chapter

1. The following limitations of the suggested model have been separated: the model is designed for evaluating the innovation infrastructure in CEE and SEE. Secondly, the model focuses on the assessment of good practices of CEE countries in innovation management and the needs of innovation in SEE countries. Thirdly, assessment of the average period of transformation of the innovation activities to social and economic benefit is a significant step in the model in order to observe the benefit of the transfer of good practices and experince in innovation management. The essence of model based on assessment of the innovation activities in Social and economic sectors in SEE

and CEE countries and policy development in political level, management level and institutional level.

2. The core components of the model identify the processes of research. The assessment process serves understanding of strategic decision making in order to develop innovation performance of SEE countries with more effective and evidence based decisions, with use of progressive experiences and good practices in innovation management of the CEE countries.

3. The quantitative structure of the model solves the issues of transfer process of good practices and experience in innovation management. For instance, the quantitative based researches in the model allow us to assess the needs of innovation in each social and economic sector in SEE countries in order to match with the progressive experiences of CEE countries in innovation management. The proposed algorithm enables the incorporation of consequences into the development of the strategy for the transfer of the experience.

4. There is a necessity for providing empirical research in order to test the model. The research should verify that the presented model is correct and has theoretical and practical importance. The results of the research should be a tool for developing advanced strategic decisions.

3

Empirical Research on International Transfer of Good Practices in Innovation Management: Modelling in the Case of the Transfer from Central-East Europe to the South-East European Countries

In this chapter, the ITMGPIM is tested by empirical research that evaluates the progressive experiences and good practices in innovation management in CEE countries in both the social and economic sectors and assesses the needs of innovation in SEE countries in order to provide strategic insights for experience transfer processes. Furthermore, the social and economic development in CEE and SEE and its nexus with innovation performance in order to provide data to assess the time period for transformation of innovation activities to social and economic benefit is presented. The results of this chapter can be found in author's publications Peyravi (2015, 2016).

3.1. Innovation Activities as an Important Factor of the Social and Economic Development in the Central-East European and South-East European Countries: the Main Trends

In this chapter, the ITMGPIM is tested by empirical research that evaluates the progressive experience and good practices in innovation management in CEE countries in both the social and economic sectors and assesses the needs of innovation in SEE countries in order to provide strategic insights for experience transfer processes. Furthermore, the social and economic development in CEE and SEE and its nexus with innovation performance in order to provide data to assess the time period for transformation of innovation activities to social and economic benefit is presented. During the past decade, South-Eastern Europe (SEE) has undergone a dramatic transformation. South-East European countries are lagging behind in their level of economic development, economic and institutional reforms, Social well-being, etc. These are big issues in the integration with the EU. Methods like analysis of legal documents, scientific publications and statistical data are applied for the research of economic and social challenges in the region (The figures and tables can be found in Annexes; Annex B).

The big historical events which led to the current geopolitical situation in the region were the breakup of the former Yugoslavia in 1991 and the collapse of communism. This resulted in changes to the whole system and the rapid emergence of macro-level challenges such as the erosion of safety nets, the restructuring of markets, the deepening of poverty and inequalities through unemployment and the devaluation of real wages, pensions and social benefits. What is more, the situation became even more difficult as changes in the system were followed by a decade of loss in human and social capital. It has been estimated that a total of three million people left their homes during the violent conflicts of the 1990s. During that decade, economic development in the South-Eastern Europe fell significantly compared to the countries of Central and Eastern Europe that joined the EU in 2004 (Lithuania, Latvia, Estonia). What is more, global financial crises had very significant negative influence on the region. From late 2008, the global economic crisis led to the collapse of external sources of finance for SEE, which had been the main driver of rapid growth in the region since 2000. Four main channels transmitted the effects of the crisis to the SEE region: a sharp contraction of foreign credits to local banks, a sharp reduction in FDI inflows, a precipitate fall in demand for exports, and falling remittance income (Bartlett, Prica, 2012). The main measure of economic development is GDP growth, especially relative to the EU28, if the economic convergence is taken into account (Galgoczi, Sergi, 2012). After the world economy started to

recover from global financial crisis, the situation in South-East Europe was more difficult than other European regions. Early indications showed that the economies of the six countries in South East Europe (the SEE6: Albania, Bosnia and Herzegovina (BIH), Kosovo, FYR Macedonia, Montenegro, and Serbia) are slowing drastically and can expect just 1.1% growth in 2012 after they achieved just 2.2% growth in 2011. Economic conditions in the Euro zone are holding back economic activity and depressing government revenues in SEE6 countries. (South East Europe Regular Economic Report, 2012) One of the biggest challenges in the region is carrying out fiscal consolidation programs. It is stated that with both public debt and financing pressures high, most countries in the region need to embark on major fiscal consolidation programs if they are to reverse their adverse debt dynamics and avoid financing problems down the road. (South East Europe Regular Economic Report, 2012).

According to the latest statistical data, SEE6 countries (the difference between SEE6 and the identification of the SEE countries in Table 3.1 and 3.2 is caused by specific situation of Kosovo. The dissertation taking in to the account the possible candidateship of Kosovo, however there are not tangible statistics on the Kosovo`s social and economic development and its innovation performance. Kosovo is a disputed territory and partially recognized state in SouthEastern Europe that declared independence from Serbia in February 2008 as the Republic of Kosovo) have the highest unemployment and poverty rates in Europe. Moreover, what growth there was during the nascent recovery in November of 2010 was largely jobless. The average unemployment rate in SEE6 (around 23%) is more than twice the CEE average, and is highly concentrated among youth and long-term unemployed, with devastating impact on human capital. Poverty reduction gains before global financial crisis are being reversed and after large shocks and depleted household buffers and savings, the middle class has become more vulnerable. With growth prospects much more moderate than before the crisis and with social pressures high, it is urgent that SEE6 country governments adopt a more ambitious structural reform agenda for growth and jobs. In general, similar and different social and economic development trends can be observed between Baltic and SEE countries (see Table 3.1 and 3.2).

Table 3.1. Social Development in SEE and Baltic Countries (average 2008–2015)

Average (2008–2015)	ALB	MAC	SRB	MON	B&H	LT	LV	EE
1	2	3	4	5	6	7	8	9
Population *1000	2.893	2.091	7.209	650	3.871	2.888	2.165	1.311

End of Table 3.1

1	2	3	4	5	6	7	8	9
Population density in the territory	98/km²	80.1/km²	92.8/km²	45/km²	75.62/km²	45/km²	34.3/km²	28/km²
Male (%) / Female (%)	49.9 / 50.1	49 / 51	49 / 51	48 / 52	47 / 53	48 / 52	48 / 52	48 / 52
Urban residents (%) / Rural residents (%)	57.4 / 42.6	59.3 / 40.7	56.4 / 43.6	63.3 / 36.7	48.3 / 51.7	67.1 / 32.9	67.7 / 32.3	70 / 30
Life expectancy (year)	79.10	76.26	74.67	74.65	76.12	75.98	73.44	74.04
HDI	0.733	0.747	0.771	0.802	0.733	0.839	0.819	0.861
Net Migration Rate	–3.3 / 1000	–0.48 / 1000	0.0 / 1000	–2.412 / 1000	0.38 / 1000	–0.73 / 1000	–2.37 / 1000	–3.37 / 1000
GDP Per capita	$5.261	$4.935	$5.267	$6.373	$4.029	$15.366	$13.729	$18.452
GINI	34.5	39.2	38	26.2	36.2	35.0	35.2	32.9
Literacy (%)	96.8	97.4	98	98.5	98	99.7	99.8	99.8
School life expectancy (year)	10	13	14	15	14	17	16	17
Total Fertility rate	1.5/M	1.59/M	1.42/M	1.68/M	1.26/M	1.29/M	1.35/M	1.46/M

Table 3.2. Economic Development in SEE and Baltic Countries (average 2008–2015)

Average (2008–2015) Currency *1000 $	ALB	MAC	SRB	MON	B&H	LT	LV	EE
Industrial trade/Ind. Trade per capita	−1.074.630 / −371.458	−822.640 / −393.158	−3.861.010 / −535.581	−596.640/ −917.907	−1.192.150 / −307.969	−2.671.231 / −924.94	−1.962.231 / 906.34	−1.266.313 / 965.91
Agricultural trade/agr. trade per capita	−315.000 / −108.976	−75.000 / −35.86	172.890 / 23.982	−211.310 / −325.092	−710.770 / −183.614	185.000 / 64.058	179.000 / 82.67	182.000 / 138.82
Export/Export per capita	2.430.724 / 840.208	4.933.845 / 2.359	14.843.348 / 2.059	440.659 / 677.936	5.892.102 /1.522.113	32.349.296 / 11.201.27	13.324.815 / 6.154	17.568.135 / 13.400
Import/Import per capita	5.229.972 / 1.807.80	7.276.702 / 3.480	20.608.585 / 2.858	2.366.751 / 3.641.155	10.990.420 / 2.839.168	35.217.367 / 12.194.37	16.778.949 / 7.750	20.167.870 / 15.383
Industrial production rate	18%	12%	14%	2%	1.5%	8%	5%	8%
% industrial production in GDP	16.3%	21.3%	36.9%	11.3%	26.4%	23.6%	26.3%	30.2%
Manufacturing production rate	9%	8%	7%	16%	7%	10%	6%	12%
% agricultural production in GDP	18.4%	8.8%	8.2%	0.8%	8.1%	3.5%	4.4%	3.7%
Energy production in toe	2.041.000	1.373.000	11.442.000	761.000	617.000	3.300.000	1.900.000	4.800.000
Energy consumption in toe	2.146.000	1.722.000	9.172.000	1.000.000	1.000.000	4.700.000	4.000.000	2.900.000
FDI/FDI per capita year/4	259.900 / 89.83	282.500 / 135.102	226.000 / 31.349	621.500 / 956.153	376.340 / 97.220	226.000 / 78.25	70.000 / 32.33	195.000 / 148.74
Unemployment	16%	27%	20%	15%	44%	11%	13%	10%

Source: prepared by the author based on statistical data analysis. (www.trademap.org; www.tradingeconomics.com; http://atlas.media.mit.edu; http://ec.europa.eu/eurostat/statistics-explained/index.php/Energy_production_and_imports)

World economic growth slowed down during 2012 as well and while the short term economic news in the Euro zone was at first positive. the risk of even more turmoil and contagion has lately risen. The outcome of the Greek crisis and what it might imply for the European and global economies is highly uncertain. Even in the case of an orderly resolution of the Greek crisis. the world economy must still deal with factors influenced by higher oil prices. reduced capital inflows. and fiscal and banking sector consolidations in high-income countries. all of which will have negative influence on growth (South East Europe Regular Economic Report. 2015).

Growth in SEE6 countries has been relatively slow in 2008 and has continued with almost same growth rate till 2014 and not all countries have yet attained their levels of activity that were identified before global financial crisis (see Fig. B.1). Both factors – recession and recovery – have differed across countries. Countries like Albania and Kosovo which managed to avoid the recession or FYR Macedonia which experienced a modest slowdown in growth have already exceeded their 2012 real GDP levels in 2014. On the other hand. countries like Bosnia and Herzegovina. Montenegro. and Serbia experienced a sharp recession and are finding it difficult to return to the same level (see Fig. B.2, B.3, B.4). What is more. even compared with EU28 countries. which were impacted by the global crisis. the recovery in SEE6 appears to be indolent (see Fig. B.5, B.6). It should be mentioned that the composition of growth has changed towards domestic demand (see Fig. B.7, B.8). Growth in SEE6 averaged 2.5% in February of 2015 compared to 4.9% in August of 2006. As in other regions. external demand (net exports) pulled the region out of the recession in 2010. However. since then. the composition of growth has shifted. Domestic demand boomed. contributing 3 percentage points to growth. split almost equally between investment and consumption in the year 2014. What is more. external demand became a drag on growth (–0.8 percentage points) as imports bounced back more than exports. reflecting the recovery of consumption. Investment recovery has been slow. except in Kosovo and in FYR Macedonia. Seemingly. growth has not been solid in part because of weak investment activity. which is held back by short-term factors. including credit. liquidity. payment arrears. as well as longer-term factors including the investment climate. (South East Europe Regular Economic Report. 2012–2015). It should be emphasized that progressive integration of SEE6 economies into the EU shows that EU trade is a key factor of SEE6 export performance and overall economic growth. The EU remains the main export market for SEE6 accounting for 56% of total exports in 2014 with the biggest share (28.7%) going to Italy and Germany. Intra-regional trade accounts for about 22.8% of exports of SEE6 economies and is especially important for Serbia. Montenegro. and Kosovo (where this share averages 28.3%). However. only FYR Macedonia has managed to orient its exports sig-

nificantly toward the most dynamic large European economy which is Germany (see Fig. B.9)(South East Europe Regular Economic Report. 2012–2015). After economic recovery in 2010 and the first half of 2011. SEE6 exports have slowed reflecting the slowdown in demand in the Euro zone and weather related factors. By the third quarter of 2010 exports had recovered to levels that were identified before global financial crisis. SEE6 exports grew by 14.1% compared to 14.3% for EU10 in 2011 (see Fig. B.10). Export growth peaked in the first quarter of 2011 at 29.7% year on year (y-o-y) and subsequently moderated to 7% in the last quarter of 2011. With an exceptionally harsh winter affecting most SEE6 countries a major decline in export growth was recorded across the region in January of 2012 – a weighted average drop of 6% (17% excluding Serbia and Albania). But the deeper reason for slowdown in exports is the adverse economic climate in the EU which is resulting in lower import demand and metal prices (South East Europe Regular Economic Report. 2012).

It should be mentioned that many countries of the region have developed a specialization in certain key industries. Bosnia and Herzegovina. FYR Macedonia. Romania and Serbia focus on steel sector whereas the main export earner in Bosnia and Herzegovina and Montenegro is aluminum. Romania also has a strong car industry through the Dacia plant. Important part of the Bulgarian. Croatian and Montenegrin economies is tourism. All of these industries were severely influenced by recession caused by financial crisis. This is considered to be a major factor behind the decline in output in the region. Exposure to the EU-28 has offered little protection – exports have tended to perform badly whether or not a country exports mainly to the European Union (such as FYR Macedonia. where 78% of exports are EU-bound) or Serbia where just 54% of exports went to EU countries before the 2008 global economic crisis (see Fig. B.11). Another important factor reflecting the economic situation in the region is import. SEE6 import dynamics were similar to those of exports during November of 2009 reflecting the overall shift toward domestic demand. After a sharp drop in 2009 and a 9% recovery in 2010 imports strengthened further in 2011 increasing by 13.6% (see Fig. B.12). A similar situation ensued in the original EU10 countries. Domestic demand and imports of intermediate and capital goods reflecting higher FDI were contributing factors. What is more the effects of higher oil and food prices were evident especially during the first half of 2011 a period of high energy prices (South East Europe Regular Economic Report. 2012–2015).

Despite the fact that the share of exports from SEE6 to EU28 has grown and the sophistication of exports with EU28 has increased since 2000. SEE6 remains the least sophisticated with regard to trade in services relative to even the EU15 with the bulk of services trade concentrated in transportation travel construction and recreation. This shows the importance of continuing to leverage

trade opportunities – in particular by increasing the sophistication of exports and moving toward greater value-added exports including trade in capital goods and modern services in order to keep the convergence machines running (South East Europe Regular Economic Report, 2012–2015).

The fall behind on economic activity and government revenues the increased automatic stabilizer expenditures in SEE6 countries and forcing them to make other fiscal policy adjustments was influenced by weak conditions in the Euro zone. Most SEE6 countries have to adopt fiscal consolidation programs to reverse debt dynamics to avoid financing problems in the future. With the exception of Kosovo government revenues have been significantly affected by the slowdown in economic activity. Revenues fell short of government budget projections in all countries except of Kosovo in 2011. Weak economic activity translated into lower collections on key revenue instruments: value-added taxes excises and customs revenues. What is more deteriorating conditions in formal labour markets resulted in reduced revenues from the personal income tax and social insurance contributions (South East Europe Regular Economic Report, 2012–2015).

Even though the prospects of EU membership and economic integration have led to income merger in SEE6. They have not yet delivered as many jobs as the SEE6 countries need. Labour market reforms (e.g. reduction of rigidities in hiring and firing. dismissal costs. etc.) and active labour market policies that promote job matching and training is believed to become critical to address the unemployment challenge (South East Europe Regular Economic Report. 2015).

It is argued that economic development continues to be an enormous challenge for political authorities. Business and civil society representatives as well as international development cooperation. Socially acceptable economic development in South-Eastern Europe is crucially important for sustainable political stability in the region. (Local/Regional Economic Development in South-Eastern Europe. 2006). The EU is very involved in the economic development process of South-East Europe countries. The European Commission made a step forward for South-East Europe establishing "The Transnational Co-operation program approved on 20 December 2007 for the period 2007–2013". The Transnational Co-operation program supports 16 countries and 200 million people are benefited from it. The EU finances the program with 206 million Euro through the European Regional Development Fund. The total budget is 245 million Euros. The strategic aim of the program is to contribute to stability competitiveness and cohesion (Anggelos. George. Spyros. 2010). It is suggested by A. Paul and I. Alexe (2012) that countries in South Eastern Europe should explore the potential of creativity as a new major driver of competitiveness in the new economic era. At the EU level the development of creative industries is one of the five priorities of the next financial period 2014–2020. These industries might drive

South Eastern Europe countries on an accelerated growth map. In general after analysing the statistics above. SEE countries are far behind CEE countries in social and economic development.

In order to reach success in the EU accession process innovation must be seen as the priority for the SEE countries. In this context the question why innovation is important under the accession process and enlargement of the EU should be explained.

In a very short period of time economic globalization has changed the world economic dynamics. On the one hand while offering new opportunities new challenges are created on the other hand. In order to cope with global and environmental issues the EU needs to be more innovative and creative to compete in global challenges. The European Union with strategic programmes such as Lisbon strategies and Europe 2020 have aims to be the world's most competitive economy. Both the Lisbon Strategy and Europe2020 defined innovation as the main factor of economic growth. However, the latest reports published by the European Commission indicates that the EU still lags behind the US and Japan in terms of innovation activities (Fig. B.13 and Fig. B.14).

This is the effect of the innovation performance of some member countries. As the goal of the EU was to be the world's most competitive knowledge economy in 2010, aiming to invest the 3 percent of GDP in R&D activities, however, in end of 2009 could allocate only 1.84 percent of GDP in R & D (Fig. B.15). In 2014, the Innovation Union Scoreboard reveals the rise in innovation growth performance in the last eight years over 1.7% in EU (Fig. B.16) (IUS. 2014). However, it is very important to emphasize the growth performance of the Baltic countries, especially in the finance sector and human resource, which are the main engine of the innovation performance (Fig. B.17) (IUS. 2014).

Among SEE countries which have a potential to be part of the Union, Serbia and FYR of Macedonia have the highest innovation performance but still rank below EU28 average. However, they have a higher growth rate than some EU member states in the innovation performance.

For instance, The Former Yugoslav Republic of Macedonia is a MODEST innovator. Innovation performance has been increasing between 2006 and 2013. The country has been catching up to the performance level of the EU: its relative performance improved from 38% in 2008 to 44% in 2013. The Former Yugoslav Republic of Macedonia is performing well below the EU average. Relative strong weaknesses are in public-private scientific co-publications, community designs and R&D expenditures in the business sector and community trademarks. Relative strengths are in non-R&D innovation expenditures and youth with upper secondary level education. Performance in terms of growth has increased significantly for community trademarks, new doctorate graduates and most cited scientific publications. Other high growing indicators are non-EU

doctorate students and population with completed tertiary education. Strong declines in growth are observed in R&D expenditures in the business sector. PCT patent applications and public private scientific co-publications (IUS. 2014) (Fig. B.18) (Table B.1).

Serbia is a Moderate innovator. Innovation performance has increased over the whole period due to increases in innovative SMEs collaborating with others, product and/or process innovators and marketing and/or organizational innovators. The country relative performance to the EU has improved from 48% in 2007 to 65% in 2013. Serbia is performing well below the EU average. Relative strengths are in Non-R&D innovation expenditures, employment in knowledge-intensive activities and youth with upper secondary level education. Relative strong weaknesses are in community designs, community trademarks and R&D expenditures in the business sector. Performance in terms of growth has been positive in Serbia for most indicators. High growth is observed for community trademarks. SMEs with marketing and/or organization innovations, innovative SMEs collaborating with others and R&D expenditures in the public sector. Declines in growth are only observed for Knowledge-intensive services exports and Non-EU doctorate students (Fig. B.19) (Table B.2) (IUS. 2014).

Within SEE6 countries Serbia has the highest performance. All in all, taking in to the consideration all this facts, it brings us to the point to declare the importance of innovation and innovation activities in the South-East of Europe for EU integration and to be part of competitive economy within EU and the global economy.

Effective innovation policies and the use of innovation potential are very important for South East European countries to ensure future socio-economic development. The capacity and competitiveness of the European Union common market and global economic changes also proves the need of innovation in SEE region. Taking in to the consideration all this facts, innovation performance and collaboration with key institution, enterprises and organizations in European Union takes very important role to maintain competitiveness on the common market of EU, creating jobs and improving the quality of life in the South East European States.

Since the object is to transfer the good practices in innovation management from Baltics to SEE countries, it is necessary to identify the needs of innovation in SEE countries and the good practices of Baltic States in innovation management. In order to achieve the objective, preliminarily, three complex researches were conducted in order to:

− Define the most important social indicators and their nexus to innovation performance in the SEE and Baltic countries based on expert evaluation on related statistics.

- Identify the most important economic indicators and their nexus to innovation performance in the SEE and Baltic countries based on expert evaluation on related statistics;

- Assess the innovation performance of the SEE region and the Baltic States and calculate the average period for positive results in social and economic development related to innovation performance.

A number of experts took part in the identification of the importance of social and economic factors related to innovation performance Furthermore, experts (The experts are being selected according their experience in the field of innovation management and economics by min. 10 years. geographical location and education level) participated in evaluation of the need and lack of managerial roles of innovation in SEE countries, and also in the identification of the good practices of the Baltic States in innovation management. The experts are divided into two groups:

Group I (Experts from Baltic States): 1) Expert A: Professor, chair of the management department; 2) Expert B: Client development executive at international company, strategic solutions, dealing with B2B sector including high technology market in the CIS and CEE countries; 3) Expert C: foreign relations executive at LCI. Regional Business Development; 4) Expert D: Expert at Ministry of Economy. Baltic Region. Economic Development department.

Group II (Experts from SEE region): 1) Expert A: Expert, regional economic development and entrepreneurship, portal on CEE and SEE; 2) Expert B: Director at Department for Regional Development and Entrepreneurship. Ministry of Economy and Regional Development; 3) Expert C. PhD at the Faculty of Economics. Finance and International Relations; 4) Expert D: economy analyst at SME support agency. Kosovo 5) Expert F: Expert at National Agency for Regional Development. Serbia.

The calculations were carried out with the methodology identified in chapter 2 dedicated to research methodologies. They display the dependence of the agreement of expert evaluations on a particular method used. The highest level of agreement was obtained by using the direct ranking method (see statistics in Table 3.1). Table 3.3 presents list of criteria when assessing social development.

Table 3.3. List of criteria when assessing social development in the Baltic countries and the South-Eastern European Countries as candidates

R_1	Population in millions (2015.12.21)
R_2	Population density in territory (2015)
R_3	Male. Female (%) (2015)

End of Table 3.3

R_4	Urban residence. Rural residence (%) (2009–2015) Average
R_5	Life Expectancy (year) (2009–2015)Average
R_6	HDI (2015)
R_7	Net migration rate (2009–2015) Average
R_8	GDP per capita (2009–2015) Average
R_9	GINI (2015)
R_{10}	Literacy 2008-2015) Average
R_{11}	School life expectancy (%) (2015)
R_{12}	Total fertility rate (2009–2015) Average

Furthermore, economic development (see Table 3.4) in Baltic and SEE countries should be assessed regarding following criteria.

Table 3.4. List of criteria when assessing economic development in the Baltic countries, and the South Eastern European Countries as candidates

T_1	Industrial trade/Industrial Trade per capita (2009–2015) Average (*1000 USD)
T_2	Agricultural trade/agricultural trade per capita (2009–2015) Average (*1000 USD)
T_3	Export/Export per capita (2009–2015) Average (*1000 USD)
T_4	Import/Import per capita (2009–2015) Average (*1000 USD)
T_5	Industrial production rate (%) (2009–2015) Average
T_6	Industrial production in GDP (%) (2015)
T_7	Manufacturing production rate (%) (2015)
T_8	Agricultural production in GDP (%) (2015)
T_9	Energy production (in toe)
T_{10}	Energy consumption (in toe)
T_{11}	FDI/FDI per capita (2009–2015) Average (*1000 USD) year/4
T_{12}	Unemployment (2009–2015) Average

In order to assess the nexus between social and economic development and national innovation performance of Baltic States and SEE countries, the following criteria should be analyzed (See Annex B. Innovation performance statistics).

The effect of equally assessed criteria, i. e. the tied ranks, on the concordance coefficient and thereby on the level of expert judgments agreement is usually insignificant and cannot change the results. Now, using the recommended methodology, the criteria were put together (see statistics in Table 3.3 and 3.4). The expert evaluation for social factors is displayed in Table 3.5 and 3.6.

Table 3.5. Expert and criteria agreement when assessing the most important social factors on innovation performance according to the indicated statistics (impact on innovation performance)

Factors	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7	Expert 8	Expert 9
R_1	0.25	0.3	0	0.05	0	0.05	0	0	0.025
R_2	0	0	0	0.05	0	0.05	0.05	0	0.025
R_3	0	0	0	0.02	0	0.05	0	0	0.025
R_4	0.1	0.1	0.15	0.1	0.1	0.1	0.15	0.25	0.05
R_5	0	0	0.2	0.15	0.1	0.1	0.1	0	0.05
R_6	0.15	0	0.1	0.15	0.2	0.1	0.1	0	0.1
R_7	0	0.1	0.15	0.05	0.1	0.1	0.15	0.25	0.1
R_8	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.25	0.2
R_9	0.05	0	0.05	0.2	0	0.05	0	0	0.1
R_{10}	0.05	0	0.05	0	0	0.05	0	0	0.05
R_{11}	0.1	0.2	0.1	0.03	0.3	0.1	0.15	0.25	0.2
R_{12}	0	0	0	0	0	0.05	0	0	0.075

The expert evaluation for economic factors displayed in Table 3.6.

Table 3.6. Expert and criteria agreement when assessing the most important economic factors on innovation performance according to the indicated statistics (its impact on innovation performance)

Factors	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7	Expert 8	Expert 9
T_1	0.05	0.05	0.025	0	0.1	0	0.05	0.05	0.1
T_2	0.05	0.05	0.025	0	0.05	0	0.05	0.05	0.1
T_3	0.2	0.1	0.15	0.25	0.15	0.1	0.2	0.1	0.2
T_4	0.15	0.15	0.15	0.25	0.15	0.1	0.1	0.1	0.1
T_5	0.15	0.1	0.15	0.15	0.07	0.1	0.2	0.1	0.15
T_6	0.1	0.025	0	0	0.07	0.3	0.05	0.05	0
T_7	0.1	0.1	0.15	0.1	0.07	0.1	0.1	0.1	0.15
T_8	0.05	0.1	0.15	0	0.07	0	0.05	0.1	0.05
T_9	0	0.01	0	0	0.01	0	0	0.05	0
T_{10}	0.05	0.015	0	0	0.01	0	0	0.1	0
T_{11}	0.1	0.2	0.15	0.25	0.2	0.3	0.15	0.1	0.15
T_{12}	0	0.1	0.05	0	0.05	0	0.05	0.1	0

The concordance coefficient calculation is done with following the appropriate formulas. The results are given below:

− Social:

$$W = 0.52; X_2 = 51.8547; X_{2kr} = 19.6751;$$

− Economic:

$$W = 0.61413; X_2 = 60.7991; X_{2kr} = 19.6751.$$

The concordance coefficient calculated by the formula indicated in research methodology. The tied ranks for social indicators are $W = 0.52$ and the value of X_2 obtained by the formula where $X_2 = 51.8547$ is larger than the critical value $X_{2kr} = 19.6751$. The tied ranks for the economic indicators are $W = 0.61413$ and the value of X_2 obtained by the formula where $X_2 = 60.7991$ Is larger than the critical value $X_{2kr} = 19.6751$.

According to the research results, expert 7 selected as the representative of the expert evaluation in both social and economic factors. The research results indicate that, the countries of SEE region demonstrate analogous social and economic development as well as in Baltic countries. However, the fact of being members of EU should be highlighted for the higher social and economic development rate in the Baltic States in the last decade. The research has presented the most important factors on innovation performance according to an evaluation of the indicated statistical data. Furthermore, the nexus between social and economic development with innovation performance should be defined in order to calculate the average period of transformation of innovation performance in relation to the social and economic benefit.

After a complex assessment of the social and economic factors and the most important factors within criteria on innovation performance, correlation coefficient should be applied. As a result 5 the most significant criteria for innovation performance were in use in correlation analysis:

- X_1 = Real GDP growth (%). Scored as 30%;
- X_2 = Real import growth (%). Scored as 10%. Selected by author regarding expert evaluation;
- X_3 = Real export growth (%). Scored as 20%;
- X_4 = Real industrial production growth (%). Scored as 20%;
- X_5 = FDI growth rate (%). Scored as 15%. selected by author regarding expert evaluation;
- Y = innovation performance (%).

The correlation coefficient method has been applied for Baltic countries and SEE countries for two different periods in the years (2009–2016). Table dedicated to the Baltic countries shows the relation between selected criteria and the innovation performance in the region (see Table 3.7).

Table 3.7. Statistical correlation on social and economic development with innovation performance in Baltic countries

Year	Y	X_1	X_2	X_3	X_4	X_5
2009	0.33	−15.9	−26.2	−13.2	−20.1	−0.25
2010	0.28	0.7	1.6	14.1	−2.6	−2
2011	0.29	4.1	5	9.2	2.7	2.2
2012	0.29	4.3	1.4	10.3	4.7	0.1

End of Table 3.7

Year	Y	X_1	X_2	X_3	X_4	X_5
2013	0.28	3.2	2.5	5.5	4.8	−0.4
2014	0.28	2.5	3.6	2.9	3.6	0
2015	0.28	2.6	3.3	2	3.5	0.5
2016	0.28	3.3	4.3	3.3	4.2	0.5
Sum	2.31	4.80	−4.50	34.10	0.80	0.65
Average	0.29	0.60	−0.56	4.26	0.10	0.08

The correlation coefficient and the Hypothesis Test results are (see Table 3.8).

Table 3.8. The correlation coefficient and the Hypothesis Test results

r_1	r_2	r_3	r_4	r_5	
−0.921513639	−0.956701045	−0.769065745	−0.912707258	0.03413864	
t_1	t_2	t_3	t_4	t_5	$t_{lent.}$
−14.23751474	−19.7208919	−7.219357581	−13.40199449	0.20495128	2.44691185

Same method should be applied for the three years difference between innovation performance and the selected criteria (see Table 3.9).

Table 3.9. Statistical correlation on social and economic development and innovation performance for different years

Year	Y	X_1	X_2	X_3	X_4	X_5
2009–2011	0.33	4.3	1.4	10.3	4.7	0.1
2010–2012	0.28	3.2	2.5	5.5	4.8	−0.4
2011–2013	0.29	2.5	3.6	2.9	3.6	0
2012–2014	0.29	2.6	3.3	2	3.5	0.5

End of Table 3.9

Year	Y	X$_1$	X$_2$	X$_3$	X$_4$	X$_5$
2013–2015	0.28	3.3	4.3	3.3	4.2	0.5
Sum	1.47	15.90	15.10	24.00	20.80	0.70
Average	0.29	3.18	3.02	4.80	4.16	0.14

And the results for the correlation coefficient and the Hypothesis Test are (see Table 3.10).

Table 3.10. Results for the correlation coefficient and the Hypothesis Test for different years in Baltic countries

r$_1$	r$_2$	r$_3$	r$_4$	r$_5$	
0.727696421	0.784800909	0.824676461	0.296151668	0.00637629	
t$_1$	t$_2$	t$_3$	t$_4$	t$_5$	t$_{lent.}$
3.182812844	−3.798968095	4.374131185	0.930182113	0.01912925	2.44691185

Same assessment should be done for the SEE countries in order to evaluate the selected factors in the region (see Table 3.11).

Table 3.11. Statistical correlation on social and economic development and innovation performance for SEE countries

Year	Y	X$_1$	X$_2$	X$_3$	X$_4$	X$_5$
2009	0.21	−3	−7.2	−12.8	−4.2	0.7
2010	0.22	0.8	−3.3	8.2	−1	−0.5
2011	0.22	2.5	1.3	8.8	1.1	0.6
2012	0.23	−0.6	−1.1	4.3	−2.2	0.7
2013	0.23	2.3	−1.2	7.5	0.1	−0.7
2014	0.24	1	1.8	5.5	−0.5	0.9

End of Table 3.11

Year	Y	X_1	X_2	X_3	X_4	X_5
2015	0.24	1.6	1.6	4.9	−0.2	0.2
2016	0.25	2.7	2.6	6.1	2.3	0.5
Sum	1.84	7.30	−5.50	32.50	−4.60	2.40
Average	0.23	0.91	−0.69	4.06	−0.58	0.30

And the results for the correlation coefficient and the Hypothesis Test are (see Table 3.12).

Table 3.12. Results for the correlation coefficient and the Hypothesis Test in SEE countries

r_1	r_2	r_3	r_4	r_5	
−0.608953052	−0.828657703	−0.486527856	−0.669945498	−0.11043153	
t_1	t_2	t_3	t_4	t_5	$t_{lent.}$
4.606265059	8.882350766	3.341288618	5.414355213	0.66666667	2.44691185

After assessment for the three years difference between innovation performance and the selected criteria the results are (see Table 3.13).

Table 3.13. Statistical correlation on social and economic development and innovation performance for SEE countries in different years

Year	Y	X_1	X_2	X_3	X_4	X_5
2009–2012	0.21	−0.6	−1.1	−0.2	−2.2	0.7
2010–2013	0.22	2.3	−1.2	11	0.1	−0.7
2011–2014	0.22	1	1.8	5.5	−0.5	0.9
2012–2015	0.23	1.6	1.6	4.9	−0.2	0.2
2013–2016	0.23	2.7	2.6	6.1	2.3	0.5
Sum	1.11	7.00	3.70	27.30	−0.50	1.60
Average	0.22	1.40	0.74	5.46	−0.10	0.32

The results for the correlation coefficient and the Hypothesis Test are (see Table 3.14).

Table 3.14. Results for the correlation coefficient and the Hypothesis Test for SEE countries in different years

r_1	r_2	r_3	r_4	r_5	
0.808074919	0.771645408	0.430635887	0.816159395	−0.1527207	
t_1	t_2	t_3	t_4	t_5	$t_{lent.}$
4.115274459	3.639533777	1.431435788	4.237390975	0.4636004	2.44691185

The results show that although there are very strong relationz between majority of criteria and the innovation performance, there are some negative relations among them too. These negative relations can be seen especially in FDI growth rate. In general, the research presenting the period of the transformation of innovation activities to social and economic benefit in the Baltic and SEE countries. At the first sight, this period can be defined as 3 years in the Baltic countries. However, the transformation period is 4 years in SEE countries.

The main goal of the research is to present on which term the research should be repeated (every 4 years). The transformation process of innovation activities to the social and economic benefit in Baltic countries is enforced by some important factors which can be presented as 1) EU common market; 2) EU's innovation support programmes and funds; 3) functional innovation support system; 4) Collaboration within EU member countries in innovation activities.

EU support funds are one of the most important factors in order to increase achievement rate in innovation activities. The funds provide capacity for innovation activities and also enforce adaptation which has direct effect on the efficiency and reliability of the experience transfer. Usage of the EU funds will be presented in next section by providing a model called Usage of EU Budget for Experience and Good Practices Transfer Model. The model uses the functions and concept of the Erasmus + programme in its core.

3.2. The Nexus between the Processes of Social and Economic Development with the Innovation Activities in the Central-East European and South-East European Countries: Dynamics and Positive Results

The transfer og good practices in innovation management aims to develop innovation activities in SEE countries on matters of sustainable development in order to improve the territorial, economic and social integration processes and to contribute to cohesion, stability and competitiveness of the region with the EU. Transfer of good practices and experince help to promote better integration between EU member states, candidates and potential candidates. Cooperation between SEE and the Baltic countries is essential for innovation activities, development of innovation policies, use of EU funds for innovation purpose, development of the innovation support system, etc. for SEE, in order to transfer the good practices of Baltic countries in innovation management. Stability, prosperity, sustainable social and economic development and security of the region are of significant interest to the European Union. During their accession process and after membership to the EU, the Baltic countries showed increasing innovation performance, which can be seen as a good practice. Roughly, such good practice examples can be grouped into the following five categories: Innovation Governance. Use of Information and Communications Technology (ICT). Clusters/Cooperative Networks. Access to Finance, as well as Training and Awareness Measures.

Transfer of good practices and experience in innovation management is crucial for:

- Turning innovation into real benefits;
- A regional strategy for knowledge and technology transfer;
- Quality of life and inclusion;
- Strengthening innovation activities in each social and economic sector;
- Development of innovation policies;
- Development of innovation policy for clustering and product development;
- Innovation through cooperation;
- Use of energy sources;
- Turn innovative visions into real companies;
- Boosting collaboration to strengthening industrial competitiveness;
- Creativity for innovation;

- Strengthening innovation capacity through cooperation;
- Use of EU funds for innovation activities.

In order to achieve our objective, the experience and good practices of the Baltic countries in innovation management should be assessed. The research focuses on the investigation on good practices in innovation types and its management, in economic and the social sectors.

A number of experts (the experts are being selected according their experience in the field of innovation management and economics by min. 10 years. geographical location and education level) took part in the identification of the good practices of the Baltic countries in innovation management.

Experts from Baltic States: 1) Expert A: Client development executive at international company, strategic solutions, dealing with B2B sector including high technology market in the CIS and CEE countries. 2) Expert B: Professor, chair of the management department; 3) Expert C: Director at Lithuania Innovation Center; 4) Expert D: Executive at innovation policy unit. MOSTA; 5) Expert E: Professor at the department of international economics and business management. VGTU; 6) Expert F: Manager at Innovation center of University of Latvia; 7) Expert G: Executive at Center for Innovations. Tallinn University; 8) Expert H: Professor at department of national economy. University of Latvia; 9) Expert I: Expert at innovation and technology development. Enterprise Estonia.

The calculations and the methodology of which we identified in the chapter dedicated to research methodologies display the dependence of the agreement of expert evaluations on a particular method used.

"Sectors of the economy and social life" against "Types of Innovation" can be shown through the equation 11.

$$\Psi = a\rho .$$
(3.1)

where Ψ represents sectors of the economy and social life, while ρ indicates Types of Innovation. Note that in above equation. Ψ is a column vector $\Psi = \left[\Psi_{i,1(i=1-29)}\right]$, whereas ρ is a row vector $\rho = \left[\rho_{1,j(j=1-9)}\right]$. The 29*9 coefficient matrix Ω is then takes the form of equation (2) (see next page).

Here, for example the column vector elements $\Psi_{1,1}$. $\Psi_{2,1}$. $\Psi_{3,1}$ ... $\Psi_{29,1}$ show Agriculture. Food Production. Mining Industry. Manufacturing. Wood processing and Furniture Production. Chemical industry. Metal processing Industry. Mechatronics-electronics industry. Pharmaceutical-biotechnological industry. IT industry. Construction and construction material production. Traditional (non-high-tech) industries. Transportation and logistics services. Transport infrastructure. Technical and engineering services. Whole sale and retail trade. Tourism. Health care. Culture. Education and training Systems. So-

cial oriented services. Public safety and security. Public administration sectors. Universities. Non-profit Organizations. Social enterprises. Banking and Finance sectors. Insurance Businesses and Real estate businesses. Accordingly, the row vector elements $\rho_{1.1}$. $\rho_{1.2}$. $\rho_{1.3}$. …. $\rho_{1.9}$ are Business and economic innovation. Organizational. Environmental and eco-innovation. Technological. Human resources and education, political. Social. Communication and Incremental. According to Equation 1, expanding equation 1 in terms of coefficient matrix elements 2, one can find.

$$\Psi_{1,1} = a_{1,1}\rho_{1,1} + a_{1,2}\rho_{1,2} + a_{1,3}\rho_{1,3} + ... + a_{1,9}\,\rho_{1,9}, \left(\sum_{i=1}^{9} a_{1,i} = 100\right)$$

$$\Psi_{2,1} = a_{2,1}\rho_{1,1} + a_{2,2}\rho_{1,2} + a_{2,3}\rho_{1,3} + ... + a_{2,9}\,\rho_{1,9}, \left(\sum_{i=1}^{9} a_{2,i} = 100\right)$$

$$\Psi_{1,1} = a_{3,1}\rho_{1,1} + a_{3,2}\rho_{1,2} + a_{3,3}\rho_{1,3} + ... + a_{3,9}\,\rho_{1,9}, \left(\sum_{i=1}^{9} a_{3,i} = 100\right)$$

$$.$$
$$.$$
$$.$$

(3.2)

$$\Psi_{29,1} = a_{29,1}\rho_{1,1} + a_{29,2}\rho_{1,2} + a_{29,3}\rho_{1,3} + ... + a_{29,9}\,\rho_{1,9}, \left(\sum_{i=1}^{9} a_{29,i} = 100\right)$$

$$\alpha = \begin{bmatrix} a_{1,1} & \cdots & a_{1,9} \\ \vdots & \ddots & \vdots \\ a_{21,9} & \cdots & a_{29,9} \end{bmatrix}.$$

(3.3)

The research results are presented in the Table 3.15.

Table 3.15. Evaluation of good practices of Baltic countries in innovation management in each social and economic sector

Sectors of the economy and social life	Types of Innovation									Expert evaluation
	Business and economic innovation	Organizational	Environmental and Eco-innovation	Technological innovation	Political	Social	Human resources and Educational innovation	Communication	Incremental Innovation	
1	2	3	4	5	6	7	8	9	10	11
Agriculture	0.2	0.3	0.05	0.3	0.05	0	0.05	0	0.05	Expert 5

Continued Table 3.15

1	2	3	4	5	6	7	8	9	10	11
Food Production	0.2	0.2	0.1	0.25	0.05	0	0.05	0	0.15	Expert 2
Mining Industry	0.2	0.2	0.05	0.3	0.05	0	0.05	0	0.15	Expert 6
Manufacturing	0.15	0.2	0	0.2	0.1	0	0.05	0	0.3	Expert 4
Wood Processing and Furniture Production	0.2	0.15	0	0.3	0.1	0	0.1	0	0.15	Expert 7
Chemical Industry	0.2	0.15	0.15	0.2	0.1	0	0.1	0	0.1	Expert 8
Metal Processing Industry	0.1	0.05	0.4	0.2	0.05	0	0.05	0	0.15	Expert 5
Mechatronics–Electronics Industry	0.1	0.05	0.05	0.4	0.05	0	0.05	0	0.3	Expert 5
Pharmaceutical–Biotechnological industry	0.15	0.15	0.15	0.3	0.05	0	0.1	0	0.1	Expert 7
IT industry	0.2	0.1	0	0.3	0	0	0.2	0	0.2	Expert 1
Construction and construction material production	0.2	0.2	0.1	0.15	0.05	0.05	0.1	0.05	0.1	Expert 4
Traditional (non–high–tech) industries	0.2	0.15	0.1	0.2	0.05	0.05	0.1	0.05	0.1	Expert 5
Transportation and Logistic Services	0.15	0.1	0.1	0.2	0.1	0.05	0.1	0.05	0.15	Expert 5
Transport Infrastructure	0.2	0.25	0.15	0.25	0.05	0	0.05	0	0.05	Expert 8
Technical and Engineering Services	0.1	0	0.3	0.3	0	0	0.05	0.2	0.05	Expert 6

End of Table 3.15

1	2	3	4	5	6	7	8	9	10	11
Wholesale and Retail Trade	0.1	0.2	0	0.25	0.05	0	0.05	0.1	0.25	Expert 7
Tourism	0.15	0.25	0.1	0	0.1	0.05	0.1	0.25	0	Expert 3
Health care	0.05	0.1	0.05	0.3	0.05	0.05	0.2	0.05	0.15	Expert 5
Culture	0.05	0.25	0.05	0	0.1	0.15	0.2	0.2	0	Expert 7
Education and Training Systems	0.05	0.25	0.05	0.05	0.05	0	0.25	0.2	0.1	Expert 3
Social Oriented Services	0	0.1	0.05	0.05	0.05	0.25	0.25	0.15	0.1	Expert 3
Public Safety and Security	0	0.15	0.1	0.05	0.15	0.05	0.35	0.1	0.05	Expert 9
Public Administration Sectors	0	0.2	0.05	0	0.05	0.05	0.3	0.3	0.05	Expert 3
Universities	0	0.1	0	0	0.05	0.05	0.5	0.3	0	Expert 3
Non–profit Organizations	0	0.2	0.1	0	0.15	0.15	0.2	0.1	0.1	Expert 1
Social Enterprises	0	0.25	0.1	0	0.1	0.2	0.2	0.1	0.05	Expert 1
Banking and Finance Sectors	0.3	0.1	0.1	0.05	0.1	0.05	0.1	0.1	0.1	Expert 3
Insurance Businesses	0.2	0.15	0.1	0.05	0.05	0.05	0.1	0.1	0.2	Expert 7
Real Estate Business	0.2	0.15	0.1	0.05	0.05	0.05	0.2	0.1	0.1	Expert 7

In order to solidify our research it is important to give the results of the concordance coefficient calculation as well as the results of Simple Additive Weighing. See Table 3.16.

Table 3.16. The results of the concordance coefficient calculation and the SAW for good practices in Baltic countries

Economic and Social Sectors	The results of concordance coefficient calculation	The results of SAW
1	2	3
Agriculture	$W = 0.58000$. $X^2 = 42.1407$. $X^2_{kr} = 15.5073$	5.923457
Food Production	$W = 0.67377$. $X^2 = 48.5111$. $X^2_{kr} = 15.5073$	6.056173
Mining Industry	$W = 0.62428$. $X^2 = 44.9481$. $X^2_{kr} = 15.5073$	6.007407
Manufacturing	$W = 0.55854$. $X^2 = 40.2148$. $X^2_{kr} = 15.5073$	5.88951
Wood Processing and Furniture Production	$W = 0.62088$. $X^2 = 44.7037$. $X^2_{kr} = 15.5073$	5.961728
Chemical Industry	$W = 0.68745$. $X^2 = 49.4963$. $X^2_{kr} = 15.5073$	6.025926
Metal Processing Industry	$W = 0.59311$. $X^2 = 42.7037$. $X^2_{kr} = 15.5073$	5.911111
Mechatronics–Electronics Industry	$W = 0.65051$. $X^2 = 46.8370$. $X^2_{kr} = 15.5073$	6.00679
Pharmaceutical–Biotechnological industry	$W = 0.46800$. $X^2 = 33.6963$. $X^2_{kr} = 15.5073$	5.819753
IT industry	$W = 0.61965$. $X^2 = 44.6148$. $X^2_{kr} = 15.5073$	5.917901
Construction and construction material production	$W = 0.60298$. $X^2 = 43.4148$. $X^2_{kr} = 15.5073$	5.948765
Traditional (non–high–tech) industries	$W = 0.61858$. $X^2 = 44.5333$. $X^2_{kr} = 15.5073$	5.92284
Transportation and Logistic Services	$W = 0.58519$. $X^2 = 42.1333$. $X^2_{kr} = 15.5073$	5.911111
Transport Infrastructure	$W = 0.57202$. $X^2 = 41.1852$. $X^2_{kr} = 15.5073$	5.900617
Technical and Engineering Services	$W = 0.45401$. $X^2 = 32.6889$. $X^2_{kr} = 15.5073$	5.851852
Wholesale and Retail Trade	$W = 0.41831$. $X^2 = 30.1185$. $X^2_{kr} = 15.5073$	5.780247
Tourism	$W = 0.36965$. $X^2 = 26.6148$. $X^2_{kr} = 15.5073$	5.633333

End of Table 3.16

1	2	3
Health care	$W = 0.54599.\ X^2 = 39.3111.\ X^2_{kr} = 15.5073$	5.819753
Culture	$W = 0.44249.\ X^2 = 31.8593.\ X^2_{kr} = 15.5073$	5.771605
Education and Training Systems	$W = 0.39815.\ X^2 = 28.6667.\ X^2_{kr} = 15.5073$	5.669753
Social Oriented Services	$W = 0.64156.\ X^2 = 46.1926.\ X^2_{kr} = 15.5073$	5.959259
Public Safety and Security	$W = 0.38560.\ X^2 = 27.7630.\ X^2_{kr} = 15.5073$	5.675926
Public Administration Sectors	$W = 0.47181.\ X^2 = 33.9704.\ X^2_{kr} = 15.5073$	5.827778
Universities	$W = 0.47387.\ X^2 = 34.1185.\ X^2_{kr} = 15.5073$	5.794444
Non–profit Organizations	$W = 0.52767.\ X^2 = 37.9926.\ X^2_{kr} = 15.5073$	5.854321
Social Enterprises	$W = 0.53560.\ X^2 = 38.5630.\ X^2_{kr} = 15.5073$	5.908642
Banking and Finance Sectors	$W = 0.36749.\ X^2 = 26.4593.\ X^2_{kr} = 15.5073$	5.595679
Insurance Businesses	$W = 0.41749.\ X^2 = 30.0593.\ X^2_{kr} = 15.5073$	5.693827
Real Estate Business	$W = 0.50309.\ X^2 = 36.2222.\ X^2_{kr} = 15.5073$	5.86358

The research results give us the opportunity to see the good practices and experiences in innovation activities and management in the Baltic States in each social and economic sector and innovation type in order to evaluate the priority of the transfer processes form Baltic to SEE Countries.

Transfer of good practices and experience are vital to support the actors involved in innovation policies and activities. It is important to create a partnership on innovation in order to enhance economic support through innovation and transfer of knowledge and technologies. Furthermore, experience transfer is significant to increase the capacity of innovation promotion, research, technology transfer and competitiveness within the policy for regional development through interconnecting knowledge, structures and personal skills. Other benefits of transfer of good practices and experince in innovation management can be seen as follow:

− To build regional consensus and create awareness on innovative firms.
− To improve the efficiency of Structural Funds.

- Increasing significantly the regional competence of the social and economic sectors.
- Use of foreign sources and attracting foreign investors.
- Improving knowledge and skills of the local producers through intensive training courses, personal connection and know–how transfer.
- To develop industrial and agro–industrial, tourism, services, agriculture and fishery as well as territorial and infrastructural policies,
- To create a leading negotiating body that links the stakeholders of the region relevant for innovation.
- Knowledge sharing, communication and networking among key actors interested in issues concerning innovation and entrepreneurship.
- Background for the implementation of innovative policies.
- Understanding of dissemination of information regarding EU financial support and project implementation for better visibility and transparency.
- Implementation of the local innovation policy.
- Formation of permanent innovation support mechanisms.
- Forming educational system regarding innovation needs.
- Cooperation among companies, key institutions and organizations.
- Policy development for strengthening SME's innovation capacity and ability through practical cooperation.
- Understanding and knowledge for monitoring achievements in innovation and its management.

All in all, the research presents the main experiences of the Baltic States, which are a fundamental step for experience transfer to match good practices in innovation management in both the social and economic sectors.

A complex assessment of the needs of and possibilities of the transfer of progressive experience and good practices of innovation activities from Baltic to SEE countries:

Since one of our objectives is to examine the needs of innovation in SEE countries, it is important to assess the lack of managerial skills in innovation in each sector of social life and economy as well as innovation type. In order to achieve our objective, preliminarily, two complex researches were conducted to:

- Analyze the analogous trends of social and economic sectors in the region by experts.
- Secondly to evaluate the needs of innovation and in each sector in order to transfer the good practices of the Baltics to SEE countries.

A number of experts took part in the identification of the need of experience transfer as well as good practices in innovation management in SEE countries in each social and economic sector.

Experts from SEE countries: 1) Expert A: Key expert at SME competitiveness and innovation. Innovation center of Albania; 2) Expert B: Executive at Department for Technological Development (Transfer of Technologies and Innovation). Ministry of education and science. Serbia; 3) Expert C: Manager at Innovation Center of Serbia; 4) Expert D: Expert at SME and business development unit. Ministry of Economy. Albania; 5) Expert E: Expert on European integration and international relations in the science. Ministry of Civil affairs. B&H; 6) Expert F: Professor at the university of Montenegro, faculty of economics; 7) Expert G: Manager at Macedonian Innovation Center. SME Innovation Monitoring. Macedonia; 8) Expert H: PhD at the Faculty of Economics. Finance and International Relations. Serbia; 9) Expert I: economy analyst at SME support agency. Kosovo.

After a complex research on the needs of innovation in the SEE countries the following results are obtained (see Table 3.17).

Table 3.17. Need of transfer of good practices and experince in innovation management in SEE countries in each social and economic sector

| Sectors of the economy and social life | Types of Innovation | | | | | | | | | Expert evaluation |
	Business and economic innovation	Organizational	Environmental and Eco—innovation	Technological innovation	Political	Social	Human resources and Educational innovation	Communication	Incremental Innovation	
1	2	3	4	5	6	7	8	9	10	11
Agriculture	0.15	0.1	0.05	0.25	0.3	0	0.1	0	0.05	Expert 3
Food Production	0.2	0.3	0.05	0.2	0.1	0	0.05	0	0.1	Expert 3
Mining Industry	0.05	0.2	0.05	0.3	0.25	0	0.05	0	0.1	Expert 6

Continued Table 3.17

1	2	3	4	5	6	7	8	9	10	11
Manufac-turing	0.25	0.2	0	0.2	0.2	0	0.05	0	0.1	Expert 4
Wood Processing and Furniture Production	0.2	0.05	0	0.3	0.2	0	0.1	0	0.15	Expert 7
Chemical Industry	0.15	0.05	0.15	0.35	0.15	0	0.1	0	0.05	Expert 3
Metal Processing Industry	0.15	0.1	0.1	0.2	0.25	0	0.05	0	0.15	Expert 5
Mechatronics–Electronics Industry	0.1	0.05	0.05	0.4	0.25	0	0.05	0	0.1	Expert 5
Pharmaceutical–Biotechnological industry	0.1	0.1	0.1	0.3	0.2	0	0.1	0	0.1	Expert 7
IT industry	0.2	0.1	0.05	0.2	0.15	0	0.2	0.05	0.05	Expert 3
Construction and construction material production	0.2	0.2	0.1	0.2	0.05	0	0.2	0	0.05	Expert 9
Traditional (non–high–tech) industries	0.2	0.15	0.1	0.2	0.05	0.05	0.1	0.05	0.1	Expert 8

Continued Table 3.17

1	2	3	4	5	6	7	8	9	10	11
Transportation and Logistic Services	0.15	0.1	0.1	0.2	0.15	0	0.1	0.05	0.15	Expert 5
Transport Infrastructure	0.2	0.2	0.1	0.25	0.15	0	0.05	0	0.05	Expert 8
Technical and Engineering Services	0.15	0	0.25	0.25	0	0	0.075	0.2	0.075	Expert 6
Wholesale and Retail Trade	0.2	0.2	0	0.15	0.05	0	0.05	0.1	0.25	Expert 1
Tourism	0.2	0.2	0.1	0.05	0.25	0.05	0.1	0.05	0	Expert 1
Health care	0.1	0.1	0	0.25	0.25	0	0.2	0	0.1	Expert 4
Culture	0.05	0.3	0.05	0	0.1	0.15	0.175	0.175	0	Expert 2
Education and Training Systems	0.1	0.2	0.05	0	0.25	0.05	0.25	0.05	0.05	Expert 4
Social Oriented Services	0	0.1	0.05	0	0.15	0.2	0.25	0.15	0.1	Expert 4
Public Safety and Security	0	0.15	0.1	0.05	0.15	0.1	0.3	0.1	0.05	Expert 4
Public Administration Sectors	0	0.2	0.075	0	0.075	0.075	0.25	0.25	0.075	Expert 7

End of Table 3.17

1	2	3	4	5	6	7	8	9	10	11
Universities	0	0.2	0	0	0.05	0.05	0.4	0.3	0	Expert 9
Non–profit Organizations	0	0.15	0.1	0	0.15	0.25	0.15	0.1	0.1	Expert 1
Social Enterprises	0	0.2	0.1	0	0.1	0.3	0.15	0.1	0.05	Expert 9
Banking and Finance Sectors	0.25	0.05	0.05	0.1	0.15	0	0.2	0.1	0.1	Expert 5
Insurance Businesses	0.2	0.1	0.15	0	0.15	0	0.25	0.15	0	Expert 6
Real Estate Business	0.4	0.15	0	0	0.2	0	0.15	0.1	0	Expert 4

In order to solidify our research it is important to give the results of the concordance coefficient calculation as well as the results of Simple Additive Weighing (see Table 3.18).

Table 3.18. The results of the concordance coefficient calculation and the SAW for SEE countries

Economic and Social Sectors	The results of concordance coefficient calculation	The results Of SAW
1	2	3
Agriculture	$W = 0.54074$. $X^2 = 38.9333$. $X^2_{kr} = 15.5073$	5.888889
Food Production	$W = 0.62798$. $X^2 = 45.2148$. $X^2_{kr} = 15.5073$	5.939506
Mining Industry	$W = 0.65195$. $X^2 = 46.9407$. $X^2_{kr} = 15.5073$	6.034568

Continued Table 3.18

1	2	3
Manufacturing	$W = 0.6716$. $X^2 = 48.3556$. $X^2_{kr} = 15.5073$	6
Wood Processing and Furniture Production	$W = 0.57953$. $X^2 = 41.7259$. $X^2_{kr} = 15.5073$	5.932716
Chemical Industry	$W = 0.68858$. $X^2 = 49.5778$. $X^2_{kr} = 15.5073$	6.038272
Metal Processing Industry	$W = 0.55093$. $X^2 = 39.6667$. $X^2_{kr} = 15.5073$	5.912963
Mechatronics–Electronics Industry	$W = 0.69537$. $X^2 = 50.0667$. $X^2_{kr} = 15.5073$	6.07037
Pharmaceutical–Biotechnological industry	$W = 0.52665$. $X^2 = 37.9185$. $X^2_{kr} = 15.5073$	5.817901
IT industry	$W = 0.72027$. $X^2 = 51.5893$. $X^2_{kr} = 15.5073$	6.046914
Construction and construction material production	$W = 0.58066$. $X^2 = 41.8074$. $X^2_{kr} = 15.5073$	5.899383
Traditional (non–high–tech) industries	$W = 0.61852$. $X^2 = 44.5333$. $X^2_{kr} = 15.5073$	5.92284
Transportation and Logistic Services	$W = 0.57963$. $X^2 = 41.7333$. $X^2_{kr} = 15.5073$	5.880247
Transport Infrastructure	$W = 0.6143$. $X^2 = 44.2296$. $X^2_{kr} = 15.5073$	5.934568
Technical and Engineering Services	$W = 0.45401$. $X^2 = 32.6889$. $X^2_{kr} = 15.5073$	5.851852
Wholesale and Retail Trade	$W = 0.41204$. $X^2 = 29.6667$. $X^2_{kr} = 15.5073$	5.74321
Tourism	$W = 0.51821$. $X^2 = 37.3111$. $X^2_{kr} = 15.5073$	5.833333
Health care	$W = 0.44835$. $X^2 = 32.2815$. $X^2_{kr} = 15.5073$	5.772222
Culture	$W = 0.44249$. $X^2 = 31.8593$. $X^2_{kr} = 15.5073$	5.771605
Education and Training Systems	$W = 0.33755$. $X^2 = 24.3037$. $X^2_{kr} = 15.5073$	5.712963
Social Oriented Services	$W = 0.56533$. $X^2 = 40.7037$. $X^2_{kr} = 15.5073$	5.931481
Public Safety and Security	$W = 0.38909$. $X^2 = 28.0148$. $X^2_{kr} = 15.5073$	5.696914

End of Table 3.18

1	2	3
Public Administration Sectors	$W = 0.47181.$ $X^2 = 33.9704.$ $X^2_{kr} = 15.5073$	5.827778
Universities	$W = 0.47387.$ $X^2 = 34.1185.$ $X^2_{kr} = 15.5073$	5.794444
Non–profit Organizations	$W = 0.62891.$ $X^2 = 45.2815.$ $X^2_{kr} = 15.5073$	5.985802
Social Enterprises	$W = 0.53981.$ $X^2 = 38.8667.$ $X^2_{kr} = 15.5073$	5.934568
Banking and Finance Sectors	$W = 0.47027.$ $X^2 = 33.8593.$ $X^2_{kr} = 15.5073$	5.769753
Insurance Businesses	$W = 0.39825.$ $X^2 = 28.6741.$ $X^2_{kr} = 15.5073$	5.680247
Real Estate Business	$W = 0.37932.$ $X^2 = 27.3111.$ $X^2_{kr} = 15.5073$	5.676543

The research results give opportunity to see the needs of innovation in exact social and economic sectors, and its need in terms of innovation types. This finding demonstrates the priority of the experience transfer as well as good practices in expert evaluations.

After a detailed research on the need of innovation in each sector of SEE countries and the evaluation of good practices of the Baltic countries in innovation management, it is important to highlight the question of how to transfer and use the experience of the Baltic States for better performance in innovation and social and economic development in SEE.

As it is explained and discussed above, transfer of good practices in innovation management is a key force of organizational interconnectedness. In fact, it is important to emphasize experience transfer as the foundation for a rapidly developing network of organizations. As organizations or the key players of the social and economic sectors gain experience they become stronger, which harms their competitors. This proposes that as some organizations and sectors gain interest from the transfer of good practices, it is a fundamental element of the competitive environment. Transfer good practices and experience in innovation management also may form knowledge about the domestic market of the EU, competitiveness conditions in EU, social and economic integration, as well as better innovation performance in innovation activities for SEE countries. The candidate countries should build opportunities for transfer of experience and good practices by interacting key sector players, key institutions and organisations with EU member countries, especially Baltic countries, together, for both task–oriented, social and economic based purposes. For instance, taking into consideration key organisations in SEE, in order to match solutions to problems,

interaction between members of one organization with problems, and members of another with solutions to those problems is a significant step. This approach brings us to the understanding of the importance of interpersonal communication. The main inclusion is that the acceptance of an individual with knowledge from one organization, and his or her placement in another organization, greatly enhances the experience transfer among the two. The same interpersonal contact should be provided between key institutions and persons in CEE and SEE region in order to improve innovation management ability of candidate states under the conditions of the enlargement of EU. Experience and good practices could also be transferred between societies not only from CEE to SEE but also the other ay around. It is important to point out the development of cultural ties can provide better communication for the integration of the good practices of innovation management. For example, regular communication between academics, seminars for businesses, academic exchange programmes, factual interaction between innovation centers. etc., can be given as a path to transfer the experience and good practices from CEE to SEE countries. Co-membership in key institutions can also be seen as an effective way. It creates an informal channel for the transfer of good practices. Furthermore, motivation plays a significant role in the transfer of experience and good practices. In this case, the European Union support budgets can be seen as the key motivation (this approach will be discussed at further discussions). The motivation to transfer experience and good practices, or to otherwise help another organization, is an issue because transferring good practices and experience involves time and effort and may impose a competitive cost. Experimental research highlights that disagreement among the groups has the impact of causing group members to relinquish motivation and contribute to collective collaboration. Other important factors are adaptation of experience and creation of the capacity for successful transfer of experience and good practices in innovation management. It has a direct effect on the efficiency and reliability of the good practices and experience transfer. This is the point that should be successfully provided by the institutions or any other organizations for the accomplished experience implementation from one to another. The organizational good practices form by know–how and information. Information is more attainable to other organizations than know–how, because communicating know–how requires a language which may depend on a high level of common knowledge, both technical and organizational, between firms.

In addition. EU funds can be used as in order to support the transfer process. However, the question of how can EU funds be used for transfer of good practices and experince in innovation management from Baltic Countries to SEE is an important one and should be highlighted.

Historically. EU funds have been used as main instrument for providing development aid to member and candidate countries. The cooperation activities are

mainly implemented in the field of economic development, technology devel-opment, social and human development as well as regional integration and co-operation. Therefore, the thesis aims to present use of EU funds as financial support for the transfer process of good practices and experince. Methodologi-cally, among European structural and Investment Funds. ERASMUS+ staff mo-bility programme is accepted as the supportive model for the object of the thesis. The Erasmus+ programme encourages Europeans to relocate in pursuit of educa-tion, higher education, and training opportunities. Connections exist with re-search activities, such as support for doctoral researchers to gain international experience in the early years of their career. Similar programme can be used for the policy makers and managers in key sectors for using good practices of Baltic States with interpersonal connection and communication. The budget of the fund is nearly 14.774 in mln Euros.

   The transfer of good practices and experience should be considered in few interactional dimensions, key institutions, key ministries, main organizations and firms in social and economic sector. The presented model shows the systematic assessment of the usage of the EU budget (see Figure 3.1).
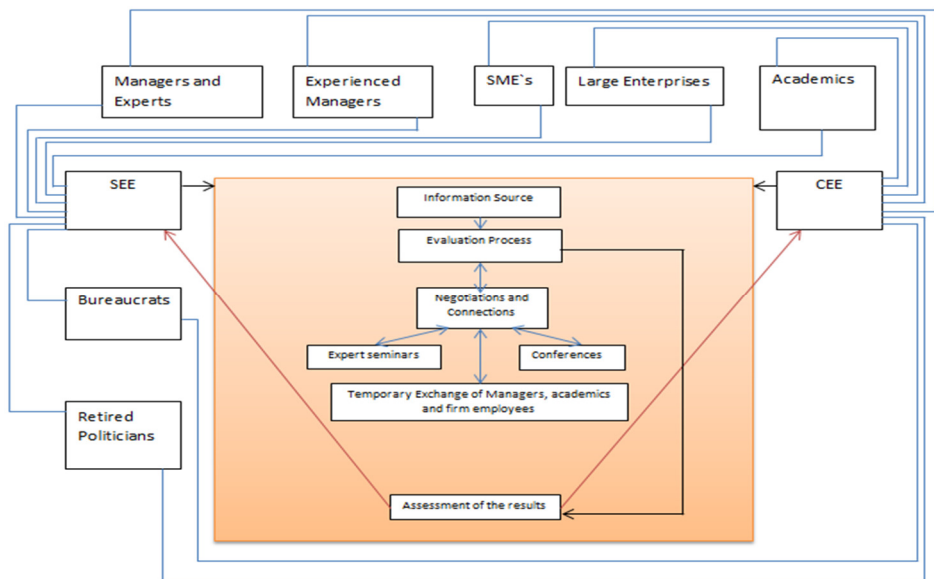

Fig. 3.1. European Union budget's Usage Model for the Trasfer of Good Practices
Prepared by author

   The main purpose of the model is to control budgetary distribution accord-ing to the need in transfer of good practices and experince in innovation man-agement. Moreover, the model aims to assess the efficiency of the EU funds in

order to achieve success in innovation management based on transfer of good practices.

The budgets should be divided among SEE countries regarding their innovation activities and management needs. Furthermore, the approximate amount of the possible participants must be presented (see Table 3.19).

Table 3.19. Approximate numbers of participant in the programme from SEE countries

Country	Number of Enterprises	Number of persons employed	Academics	SME	Large Enterprises	R&D staff
Albania	77.719	320.373	~3.900	77.090	89	~600
Macedonia	53.353	332.945	~3.000	53.224	129	~1.600
Serbia	283.874	1.407.618	~13.500	283.386	488	~18.100
B&H	81.012	390.214	~9000	80.910	102	~1.400
Montenegro	21.127	152.120	~1000	21.085	42	~500
SME's Share in EU28	99.8%	66.9%	–	–	–	

Prepared by author.

According to the numbers above. it is clear that the necessary budget is way below that of the Erasmus program. A reasonable EU budget can be used in order to run transfer of good practices in innovation management. In addition, experience sharing takes place at political and institutional levels (presented in Jakubavicius *et al.* 2008).

The key ministries and institutions with their functions and missions are presented in annexe A. It is worth mentioning that transfer of good practices and experience in public governance (political level) and institutional level is vital. This process will help SEE countries shape their innovation support system, to see the lack of managerial understanding in innovation and to acquire knowledge to encourage the involvement of key actors in the support system. The purpose of the support fund can be seen under 3 targets:

KEY TARGET 1:

− Staff mobility;
− Nexus between key institutions SEE and Baltics;

− Nexus between SME's and large companies in order to share experience in innovation management in SEE and Baltics;

− Mobility of key actors from ministries from SEE countries to Baltics.

KEY TARGET 2:

− Strategic Partnerships;

− Knowledge Alliances;

− Sector Skills Alliances;

− Capacity building projects supporting cooperation with partner countries in the field of innovation.

KEY TARGET 3:

− Prospective initiatives;

− Support to innovation policy tools;

− Cooperation with regional organisations in innovation activities.

The support programme encourages SEE countries to focus on their innovation activities and obtain positive result with using the good practices of the Baltic countries. Moreover, it will help candidate countries in the SEE region ease the integration process and developing social and economic partnership with Baltic countries, as well as sharing experience in innovation management.

3.3. A Complex Assessment of the Possible Transfer of Good Practices in Innovation Management from Baltics to the South-East European Countries

In this section, the proposed model is subject to verification. The following studies have been made: assessment of the social and economic development in the Baltic States; assessment of the innovation support system in the Baltics; assessment of the positive experience in innovation activities in economic and social sectors; assessment of the social and economic development in SEE countries; assessment of the innovation support system in SEE countries; assessment of the needs of experience in innovation management and activities in economic and social sectors in SEE countries; assessment of directions for the development of innovation activities. Empirical research confirmed appropriateness of the model for the effectiveness improvement of transfer of good practices in innovation management at key SEE institutions and estimated their development needs and opportunities.
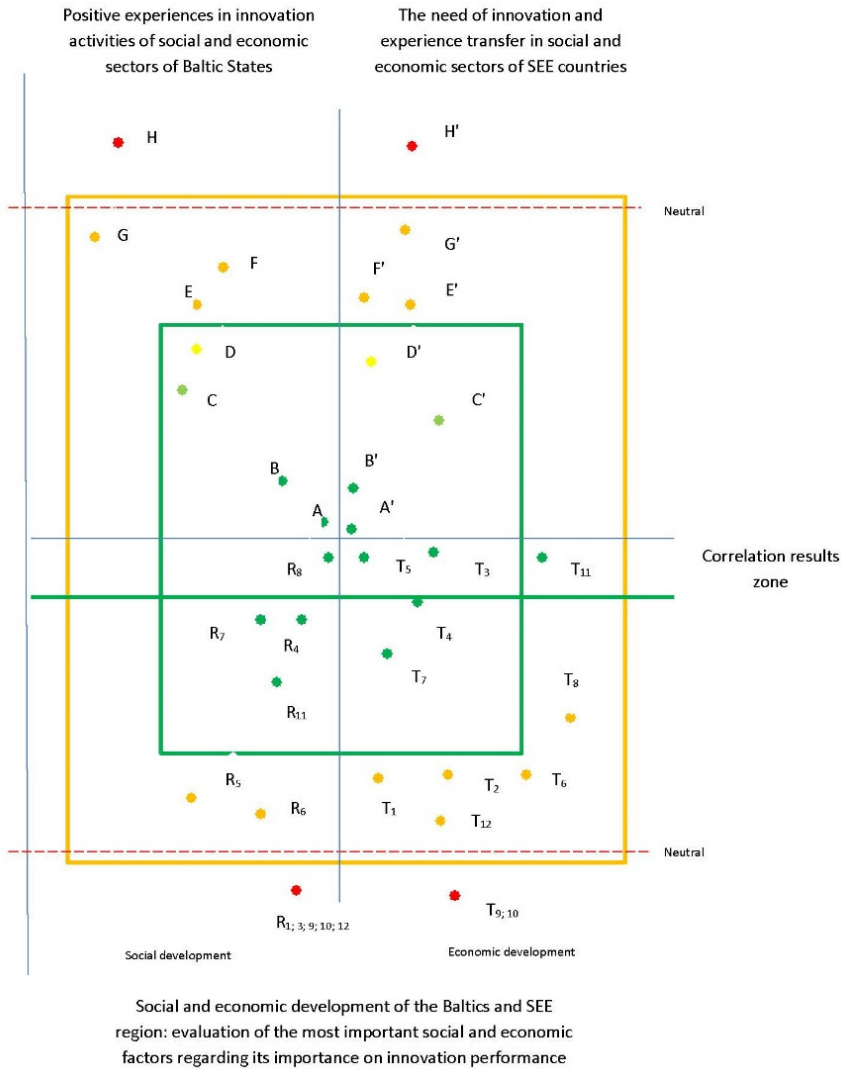
Fig. 3.2. Implications of transfer of experience and good practices in innovation management in order to solve practical issues of management process

The proposed matrix provides an opportunity to locate the obtained results in the same frame. The matrix is applicable for the selection and targeting the transfer process of good practices and experince based on empirical research results. The transfer of good practices in innovation management could be im-

proved by designing and implementing measures and instruments according to the suggested principles. For instance, the convergence of the selected factors to the center of the matrix identifies the priority and major necessity of the experience transfer in the selected sectors and innovation types.

The results not only include the representative expert view it also takes into the account other experts views too. The results in the green zone should be accepted as the core and the priority of the experience transfer. The orange zone results are the secondary process of the experience transfer and the red zone shows the results where transfer of experience and good practices are not needed.

The comparison of social and economic statistical research on development processes and innovation activities in the CEE and SEE countries has been made. The object of this research is to assess the most important social and economic factors in order to evaluate their connection with innovation performance (see Table 3.20). The results should be evaluated as follows:

Table 3.20. Scale for assessment of nexus between social and economic factors and innovation performance, based on proposed index

Levels	High related indicators	Significant indicators	Low rated indicators
Index	(16–50]	(6–15]	≤ 5
Correlation results	$0.6 \leq r \leq 1$	$0.4 \leq r \leq 0.59$	$r \leq 0.39$

In order to assess the most important social and economic factors and their nexus to innovation performance, the developments in the selected factors among the years 2009–2016 were observed. The obtained results could be evaluated as follows:

 − where social and economic development index 16–50, as high related indicators;
 − where development index 6–15, as significant indicators;
 − where development index less than 5, low rated indicators.
The correlation evaluation could be observed as follow:
 − where correlation scale 0.99–0.7, high relation;
 − where correlation scale 0.69–0.40, positive relation;
 − where correlation scale 0.4–0.01, weak relation.

Furthermore, good practices in innovation types and its management in economic and the social sectors in Baltic countries, as well as the need of innovations in SEE countries are investigated. The research results leans on the experience in innovation management in both social and economic sectors. Furthermore, the results provide the opportunity to assess the following findings to evaluate the need of transfer of good practices and experince in the exact sector and identify the priority of the transfer process in innovation management. The results should be evaluated as follows in Table 3.21.

Table 3.21. Scale for assessment of good practices in innovation management in Baltic States, assessment of the needs of innovation and its management in SEE countries, based on proposed index

Levels	Preferential sectors for experience transfer in innovation management (Green zone)	Secondary sectors for experience transfer in innovation management (Orange zone)	No need or no experience in innovation management (Red zone)
index	(25–50]	(24–5]	(4–0]

The obtained results could be evaluated as follows:
- where A, A' index 45–50,
- where B, B' index 40–44,
- where C, C' index 35–39,
- where D, D' index 30–34,
- where E, E' index 25–29,
- where F, F' index 15–24,
- where G, G' index 5–14,
- where H, H' index 0–4.

The experience transfer in innovation management could be improved by designing and implementing measures and instruments according to the suggested principles. For instance, the convergence of the selected factors to the center of the matrix identifies the priority and major necessity of the experience transfer in the selected sectors and innovation types.

The results not only include the representative expert view but also take into the account other experts views. The results in the green zone should be accepted as the core and the priority of the transfer of good practices. The orange zone results are the secondary process of the experience transfer, and the red zone shows the results where transfer of good practices is not needed. In red–zone circumstances, if experience transfer is needed for SEE countries, the good

practices in innovation management should be transferred from other CEE countries which have better score. Furthermore, the proposed matrix presents the exact experience of Baltic countries in each sector of social and economic life and innovation types or order to match the need of innovation and managerial experience for SEE countries.

3.4. Conclusions of the 3rd Chapter

1. In this chapter the verification of the proposed model is performed. The following studies have been made: assessment of the social and economic development in the Baltic States; assessment of the innovation support. The empirical research has revealed the need and the purpose of testing the model. The recommended theoretical model is eligible to assess innovation activities. innovation performance. and the good practices in innovation management. The obtained results investigating the role of the efficient innovation support system showed that integrated methods and assessments can be used for forming new knowledge about innovation management. The model could be accepted as a mean for understanding the importance of transfer and use of experience and good practices in innovation management.

2. The obtained consequences of empirical research are such as a better perception of significance of innovation in the context of enlargement of the European Union. The research also helps with understanding the structure of innovation support systems. and the understanding of the lack of experience in innovation management. Furthermore. the proposed model and obtained results provide the opportunity to frame the good practices of Baltic countries in innovation management and the need of innovation and its management in SEE countries in order to transfer the experience and good practices from the Baltics to the candidate countries.

3. The obtained results of the empirical research are also useful for assessing social and economic development in SEE countries and its nexus with innovation performance. From the practical point of view. the SEE countries can develop better strategies in innovation that could lead to new synergies and the improvement of performance for new challenges by using the good practices of Baltic states.

General Conclusions

1. The development of innovation is exceptionally significant for EU candidate countries beyond social and economic challenges. Innovation enforces international competitiveness and has effect on the sustainable technological. political. economic and social growth of each country. In this context. the following patterns for the justification of the transfer of the good practices of Baltics countries to the SEE should be identified:

    –   Innovation is bonded to the ventures and changes which develop into high technical, technological. process and market ambiguity;

    –   Experience transfer in innovation management can minimize the risk of innovation while boosting its scale and performance;

    –   The need for high investment in order to develop public innovation support systems and also the necessity of knowledge and prediction of risks gives priority to the transfer of good practices in innovation management. Thus, targeted achievements for successful innovations are essential. Despite the fact that a wide range of research and theoretical studies have been made on the subject of innovation, further exploration of experience transfer in innovation management under the enlargement conditions of

the EU is needed due to a lack of efficiency and the limited op-
portunities to assess its progress.

2. Usually the challenges of innovation activities are solved according
   to neoclassical and evolutional approaches. This limits the unders-
   tanding of how important is transfer of good practices and experince
   in innovation management and its effects on innovation activities.
   Therefore, in order to increase the effectiveness of innovation mana-
   gement it is very important to follow these directions for scientific
   research: to perform complex analysis of social and economic sectors
   and innovation types; to create and apply. in practice. methods for
   assessment and interpretation of experience transfer.

3. Taking into consideration the diversity of social and economic condi-
   tions in SEE and the necessity of experience in innovation manage-
   ment. the effectiveness assessment should be based on a holistic
   innovation paradigm. By following it, the main stages for assessment
   of good practice could be elaborated: assessment of the social and
   economic developments in Baltic States; assessment of the innova-
   tion support system in Baltics and SEE countries; assessment of the
   good practices in innovation activities in economic and social sec-
   tors; assessment of the social and economic developments in SEE;
   assessment of the innovation support system in SEE; assessment of
   the needs of experience in innovation management and activities in
   economic and social sectors in SEE; assessment of directions for the
   development of innovation activities.

4. The proposed model could be used in various phases of innovation
   policy development and implementation and allows improvement of
   transfer of good practices and experince in innovation management.
   The suggested assessment model has the following advantages:

   − Ensures the relevance of transfer of good practices in innova-
     tion management to the innovation challenges and the problems
     in social and economic integration.

   − Enables the expression of good practices in innovation man-
     agement from Baltic countries to SEE with investigation on the
     needs of innovation in candidate countries by quantitative pa-
     rameters. According to the proposed assessment principles, fac-
     tors that are dedicated for social and economic indicators and
     criteria for innovation performance are identified and probabil-
     ity of occurrence of the complex impact is expressed. Further-
     more. by applying the proposed model, the most important so-

cial and economic factors are assessed by applying multi–criteria SAW method and the nexus between social and economic development and innovation performance is calculated by using Correlation coefficient method.

- Exhibit the good practices on innovation management in Baltic States and the needs of innovation in each social and economic sector in SEE by applying multi–criteria SAW method.

- The proposed model can be applied for: the justification of the most important social and economic factors (e.g. if the indicated social and economic factors T or R< 10 then the scale the criteria should be developed); the justification of innovation types related with social and economic sectors in order to evaluate the good practices in innovations in Baltic States and the needs of innovation in SEE countries (e.g. if the indicated factors φ < 10 then innovation activities should be targeted to the selected sectors).

5. The empirical research where the proposed model was implemented revealed the important patterns for the experience transfer:

   - The impact of experience transfer occurs only in the long term.

   - In order to develop innovation policies it is important to be focused on the effectiveness of the good practices of member countries, and the model provides opportunity to distinguish the main social and economic criteria depending on the sector of economy which performance improvement is needed.

6. The proposed model is in use in order to develop the social and economic integration process of SEE countries at both national and EU levels regarding to the transfer process based on implementation of positive experience and good practices of the Baltic countries in innovation management. The application of the model is beneficial as it increases the efficiency of innovation management. as well as the countries' competitiveness on the long term. and explores the direct and indirect effects of experience transfer on policy makers in innovation management.

References

Aggelos, K.; George, G.; Spyros, R. 2010. The Role of EU at Cross Border Economic Cooperation in South East Europe. *Research Journal of International Studies* (17).

Almeida, P.; Kogut, B. 1999. Localization of Knowledge and the Mobility of Engineers in Regional Networks. *Management Sci.* (45): 905–917.

Archick, K. 2012. *European Union Enlargement*. Congressional Research Service.

Argote, L. 1999. *Organizational Learning: Creating, Retaining and Transferring Knowledge*. Kluwer, Boston, MA.

Atamer, T.; Calori, R.; Nunes, P. 1999. *The Dynamics of International Competition*. Sage publications p. 256

Baker, W. E. 1993. *Networking Smart*. McGraw-Hill, New York.

Baležentis, A.; Žalimaitė, M. 2012. *Public Policy and Administration* 11(2):198–212.

Barnett, W. P.; Hansen, M.T. 1998. The Red Queen in Organizational Evolution. *Strategic Management J.* (17): 139–157.

Barrett, S.; Hill, M. 1984. Policy, Bargaining and Structure in Implementation Theory: Towards an Integrated Perspective. *Policy and Politics* 12(3): 219–240.

Bartkowski, M. 2003. *Analysis of Theoretical Approaches to the EU Enlargement*, Paper Presented at the Academic Skills Development Workshop: Impact of the European Union 'Eastern' Enlargement. Odessa National University, 6–9 February 2003, Odessa, Ukraine.

Bartlett, W.; Prica, I. 2012. *The Variable Impact of the Global Economic Crisis in South East Europe.* Research on South Eastern Europe.

Bator, F. 1958. The Anatomy of Market Failure. *Quarterly Journal of Economics* 782(3): 351–379.

Batt, J.; and Wolczuk, K. 1999. *The political context: building new states*, in Paul Hare, Judy Batt and Saul Estrin (eds), Reconstituting the Market: The Political Economy of Microeconomic Transformation. Amsterdam: Harwood, p.33-48.

Baum, A.C.; Ingram, P. 1998. Population-level Learning in the Manhattan Hotel Industry, 1898-1980. *Management Sci.* (44): 996–1016.

Beerepoot, M. 2007. Public Energy Performance Policy and the Effect of Diffusion of Solar Thermal Systems in Buildings: a Dutch Experience. *Renewable Energy* 32: 1882–1897.

Bell, M.; Pavitt, K. 1993. Technological Accumulation and Industrial Growth: Contrasts between Developed and Developing Countries. *Industrial and Corporate Change* 2 (2): 157-210.

Bhatta, G. 2003. Don't Just do Something, Stand There: Re-visiting the Issue of Risks in Innovation in the Public Sector. *The Innovation Journal: A Special Issue on Innovation in Governance* 8(2):40–55.

Blake, M.; Hanson, S. 2005. Re-thinking Innovation: Context and Gender. *Environment and Planning* (37): 681–701.

Blindenbach, F. 2006. Innovation in Project-based Firms: the Context Dependency of Success Factors. *Research Policy* (35): 545–561.

Boldrin, M.; Canova, F. 2001. Inequality and Convergence in Europe's Regions: Reconsidering European Regional Policies. *Economic Policy* 16(32): 205.

Bores, C.; Saurina, C.; Torres, R. 2003. Technological Convergence: A strategic perspective. *Tech-novation* (23): 1–13.

Braczyk, H.; Cooke, P.; Heidenreich, M. 1998. *Regional Innovation Systems*. London: UCL Press Limited p.122

Brusis, M. 1998*. Central and Eastern Europe on the Way into the European Union: Welfare State Reforms, in the Czech Republic, Hungary, Poland and Slovakia*. München: Centrum für Angewandte Politik forschung;

Cainelli, G.; Evangelista, R.; Savona, M. 2004. The Impact of Innovation on Economic Performance in Services. *The Service Industry Journal* 24(1): 66–81.

Carter, C.F.; Williams, B.R. 1957. The Characteristic of Technically Progressive Firms. *Journal of Industrial Economics* p. 87–104.

Cassiman, B.; Veugelers, R. 2002. *Complementarity in the Innovation Strategy: Internal R&D, External Technology Acquisition, and Cooperation* in R&D. London: Mimeo p. 563.

Chaminade, C.; Edquist, C. 2006. *From Theory to Practice. The Use of the Systems of Innovation Approach in Innovation Policy*. Oxford: Oxford University Press p. 533

Chandy, R. K.; Prabhu, J. C.; 2010. *Innovation Typologies*. Wiley International Encyclopedia of Marketing No.5.

Checkel, T.; Moravcsik, A. 2001. A Constructivist Research Program in EU Studies? *European Union Politics* 2(2): 219–249.

Christiansen, T.; Jørgensen, E.; Wiener, A. 1999. Special Issue on the Social Construction of Europe. *Journal of European Public Policy* (6): 527–720.

Chryssochoou, N. 2001. *Theorizing European Integration*. SAGE Publications, p. 50–56.

Clark, J. 1979. *A Model of Embodied Technical Change and Employment*. Science and Policy Research Unit.

Cohen, W. M.; Levinthal, D.A. 1990. Absorptive Capacity: a New Perspective on Organizational Learning and Innovation. *Admin. Sci. Quart* (35): 128–152.

Cohendet, P.; Stojak, L. 2005. The Digital Divide in Europe: The Economic and Social Issues Related to knowledge-based Europe (305): 5–28.

Cooper, R. 1994. Third Generation New Product Process. *Journal of Product Innovation Management* 11(1): 3–14.

Cooper, R. G.; Kleinschmidt, E. J. 1991. *New Products: What Separates Winners from Losers?* In Henry, J. and Walker, D., Managing Innovation and Change, London.

Coordination of Research Policies with the Western Balkan Countries (WBC). (wbc-inco.net). 2011. *Report on the mapping of the WBC Innovation infrastructure* 8(48/1).

Darr, E. D.; Kurtzburg, T. 2000. An Investigation of Partner Similarity Dimensions on Knowledge Transfer. *Organ Behavior Human Decision Processes* (82): 28–44.

Darr, L.; Argote, D. E. 1995. The Acquisition, Transfer and Depreciation of Knowledge in Service Organizations: Productivity in Franchises. *Management Sci.* (41): 1750–1762.

David, P. A.; Foray, D. 2002. An Introduction to the Economy of the Knowledge Society. *International Social Science Journal* (171):5–9.

Deutsch, W. 1957. *Political Community and the North Atlantic Area*. Princeton University Press, p. 105–143.

Dobrinsky, R. 2009. The Paradigm of Knowledge-Oriented Industrial Policy. Journal of Industry. *Competition and Trade* (9): 273 0150305.

Dosi, G.; Llerena, P.; Labini, M. S. 2006. The Relationships between Science, Technologies and Their Industrial Exploitation: An Illustration Through the Myths and Realities of the So-Called 'European Paradox'. *Research Policy* 35 (10): 1450–1464.

Earl, L. 2004. *An Historical Comparison of Technological Change, 1998–2000 and 2000–2002*, In the Private and Public Sectors. Ottawa: Statistics Canada p. 79.

Edquist, Ch. 2001. *Innovation Policy in the Systems of Innovation Approach: Some Basic Principles*. In Knowledge, Complexity and Innovation Systems. Vienna: Springer. 557 p.

European Commission. 1987. Innovation and Technology Transfer. Newsletter, DGXIIID-2 14/1(3/93): 12.

European Council. 2000. Employment, Economic Reform and Social Cohesion. Lisbon.

European Council. 2006. An innovation-friendly modern Europe. Brussel, p. 589.

Eurostat. 2008. R&D Expenditure in Business Enterprises. Available at: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/R_%26_D_expenditure_in_business_enterprises.

Fagerberg, J. 2005. The Oxford Handbook of Innovation. Oxford University Press. Oxford New York.

Fagerberg, J.; Srholec, M. 2008. National Innovation Systems, Capabilities and Economic Development. *Research Policy* (37): 1417–1435.

Figueira, J.; Greco, S.; Ehrgott, M. 2005. *Multiple Criteria Decision Analysis: State of the Art Survey.*

Freeman, C.; Soete, L. 2009. Developing Science, Technology and Innovation Indicators: What We Can Learn from the Past. *Research Policy* (38): 583–389.

Friedman, T. l. 2005. *The World is Flat: the Globalized World in the Twenty-First Century*. Penguin books, p. 660.

Fung, A.; Wright, E. 2001. Deepening Democracy: Innovations in Empowered Participatory Governance. *Politics and Society* 29 (1): 5–42.

Galgoczi, B.; Sergi, B. S. 2012. *Social and economic trends in south-east Europe*. European Trade Union Institute, Brussels.

Gavin, K.; Muers, S. 2002. *Creating Public Value: An Analytical Framework for Public Service Reform* p. 72

Ginevicius, R. 2008. Normalization of Quantities of Various Dimensions. *Journal of Business Economics and Management* 9(1): 79–86.

Ginevicius, R.; Podvezko, V. 2004. Quantitative Assessing the Accuracy of Expert Methods. *Engineering Economics* (5): 7–12.

Grabbe, H. 2002. *Stabilizing the East while keeping out the easterners: internal and external security logics in conflict, in Externalities of integration: the wider impact of Europe's immigration and asylum policies*. eds. Sandra Lavenex and Emek Uçarer, Lexington Books p. 91–104.

Grindley, P.; Mowery, D.C.; Silverman, B.S. 1994. *SEMATECH and Collaborative Research: Lessons in the Design of High-technology Consortia*. J. Policy Anal. Management (13): 723–758.

Guzzetti, L. 1995. *A Brief History of European Union Research Policy. Science Research Development Studies*. 5, European Commission, Brussels, October.

Hamel, G. 1991. Competition for Competence and Inter-partner Learning Within International Strategic Alliances. *Strategic Management* (12): 83–103.

Hansen, M. T.; Birkinshaw, J. 2007. The Innovation Value Chain. *Harvard Business Review* 85(6):121–130.

Hanusch, H.; Pyka, P. 2007a. The Principles of Neo-Schumpeterian Economics. *Cambridge Journal of Economics* (31): 275–289.

Hanusch, H.; Pyka, P. 2007b. *The Elgar Companion to Neo-Schumpeterian Economics*. Edward Elgar. Cheltenham, UK.

Hassink, R.; Dong-Ho S. 2005. The Restructuring of Old Industrial Areas in Europe and Asia. *Environment and Planning* (37): 571–580.

Havas, A. 2006. *Knowledge-Intensive Activities versus High-Tech Sectors: Learning Options and Traps for Central European Policy-Makers*. In K. Piech and S. Radosevic (eds). The Knowledge-Based Economy in Central and Eastern Europe: Countries and Industries in a Process of Change. Basingstoke: Palgrave Macmillan 259–279.

Havlik, P. 2005. Central and East European Industry in an Enlarged European Union: Restructuring, Specialization and Catching-up. *Economie Internationale* 2 (102): 107–132.

Havlik, P. 2007. Economic Restructuring in the New EU Member States and Selected Newly Independent States: Effects on Growth, Employment and Productivity. Emerging Markets: Any Lessons for Southeastern Europe? *Proceedings of OENB Workshops* (12): 10–45.

Heidenreich, M. 2004. *The Dilemmas of Regional Innovation Systems*. London: Routledge p. 569.

Henderson, R.; Cockburn, I. 1996. Scale, Scope and Spillovers: The Determinants of Research Productivity in Drug Discovery. *Rand J. Economy* (27): 32–59.

Heritier, A. 1996. The Accomidation of Diversity in European Policy-Making and its Outcomes: Regularity Policy as a Patchwork. *Journal of European Public Policy* 3 (2): 149–167.

Hofbauer, H. 2003. EU *Integration*. Osterweiterung, promedia, p. 240.

Hoffmann, S. 1995. *The European Sisyphus. Essays on Europe*. 1964–1994, Westview Press p. 71–106.

INNO-Policy TrendChart. 2006. European Innovation Progress Report. European Commission, Enterprise and Industry Directorate-General. Available at http://www.proinno-europe.eu/trendchart/european-innovation-progress-report.

INNO-Policy TrendChart. 2007. INNO-Policy TrendChart Annual Country Reports for Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia, Bulgaria and Romania. Reports for the years of 2006 and 2007 (in some cases to specify

facts reports for earlier years have been used). European Communities. Available at http://www.proinno-europe.eu/trendchart/annual-country-reports.

INNO-Policy TrendChart. 2008. European Innovation Progress Report. European Commission, Enterprise and Industry Directorate-General. Available at http://www.proinno-europe.eu/page/european-innovation-progress-report.

INNO-Policy TrendChart. 2009. European Innovation Progress Report. European Commission, Enterprise and Industry Directorate-General. Available at http://www.proinno-europe.eu/page/european-innovation-progress-report.

Innovation Union Scoreboard. 2014. p. 17–30, 73-80 (Last Seen: 15.8.2015). Available at https://era.gv.at/object/document/1275/attach/20140327-innovation-union-scoreboard-2014.pdf

Jakubavičius A.; Jucevičius R.; Jucevičius G.; Kriaučionienė M.; Keršys M. 2008*. Inovacijos Versle: Procesai, Parama, Tinklaveika*. Vilnius: Lietuvos Inovacijų Centras.

Juma, C.; Yee-Cheong, L. 2005. *UN Millennium Project. Innovation: Applying Knowledge in Development.* London: Sterling p. 332.

Kaiser, R.; Kripp, M. 2010. *Demand-Orientation in National Systems of Innovation: A Critical Review of Current European Innovation Policy Concepts*. Paper to be presented at the DRUID Summer Conference 2010: Opening Up Innovation: Strategy, Organization and Technology, Imperial College London Business School, 16–18 June 2010.

Kattel, R. 2009. *Trade, Innovation, Finance: Towards a Taxonomy of Knowledge Governance Regimes.* Paper for the INCT/PPED international seminar on "Promoting Responses to Globalization", Rio de Janeiro.

Kattel, R. 2010. Financial and Economic Crisis in Eastern Europe. *Journal of Post Keynesian Economics* 33 (1): 41–60.

Kogut, B.; Zander, U. 1992. Knowledge of the Firm, Combinative Capabilities, and the *Replication of Technology. Organ. Sci*. (3): 383–397.

Kok, W. 2003. *Enlarging the European Union*: Achievements and Challenges. European University Institute.

Kopecký, P.; Mudde, C. 2000. What has Eastern Europe taught us about the democratization literature? *European Journal of political Research* (32):517–539.

Kox, H.; Lejour, A. 2006. *Dynamic Effects of European Services Liberalization: More to be Gained.* Prime Minister's Office Economic Council of Finland p. 21

Kranich, J. 2008. The Spatial Dynamics of the European Biotech Industry: A NEG Approach with Vertical Linkages. *Journal of Business Chemistry* 5 (1): 23–38.

Krasner, D. 1982. Structural Causes and Regime Consequences: Regimes as Intervening Variables. *International Organization* 36(2): 185–205.

Kubielas, S. 2009. *Technology Gap Approach to Industrial Dynamics and Sectoral Systems of Innovation in Transforming CEE Economies*. Paper for the DIME workshop on

Industrial Dynamics and Sectoral Systems in Developing Economies. Bocconi University. Milan.

Langrish, C.; Gibbons, M.; Evans, W.G.; Jevons, F.R. 1972. *Wealth from Knowledge*. Macmillan, London.

Leifer, R.; Colarelli O`Connor, G.; Peters, L. S. 2000. *Radical Innovation*. Harvard Business School Press. Boston. MA.

Levinthal, D. A.; March, J. G. 1993. The Myopia of Learning. Strategic Management Journal (14): 94–112.

Liaudanskiene, R.; Ustinovicius, L.; Bogdanovicius, A. 2009. Evaluation of Construction Process Safety Solutions Using the TOPSIS Method. *Engineering Economics* (4): 32–40.

Lindberg, L.; Scheingold, A. 1970. *Europe's Would-Be Polity: Patterns of Change in the European Community.* Prentice-Hall, New Jersey.

Linz, J.; Stepan, A. 1996. *Problems of Democratic Transition and Consolidation: Southern Europe, South America, and Post-Communist Europe*. Baltimore MD, Johns Hopkins University Press.

Local/Regional Economic Development in South-Eastern Europe. 2006. Concepts, Instruments, and Lessons Learned/ Bottcher, D.; Gantzer- Sommer U.; Kallmayer, R.

Lundvall, B. A. 2007. *National Innovation System: Analytical Focusing Device and Policy Learning Tool*. Ostersund: Swedish Institute for Growth Policy Studies p. 238.

Lundvall, B. A.; Johnson, B.; Andersen, E. S.; Dalum, B. 2002. National Systems of Production, Innovation and Competence Building. *Research Policy* 31(2): 213–231.

Lundvall, B.-Å. 1992. *National Systems of Innovation. Towards a Theory of Innovation and Interactive Learning.* Pinter Publishers, London.

Lundvall, B.-Å. 2010. Introduction. In B.-Å. Lundvall (ed.). *National Systems of Innovation: Toward a Theory of Innovation and Interactive Learning*. The Anthem Other Canon Series. London, New York: Anthem Press 1–19.

Lundvall, B.-Å.; Vang, J.; Joseph, K.J.; Chaminade, C. 2009. *Bridging Innovation System Research and Development Studies: Challenges and Research Opportunities*. Paper submitted for the 7thGlobelics Conference, Senegal, 6–8 October 2009.

Mackay, R. 2007. *Services in the Context of EU Policy for Enterprise and Industry*. RESER Conference, Brussels.

MacPherson, M. 2001. *Performance Excellence Principles – Drivers of Innovation in Public Sector Organisations*. Paper presented at the National Conference of the New Zealand, Organ.

Mankiw, G.; Kneebone, R.; McKenzie, K.; Row, N. 2002. *Principles of Microeconomics*: Second Canadian Edition. United States: Thomson-Nelson p. 411

March, J.; Olsen, J. 1989. *Rediscovering Institutions*. The Organizational Basis of Politics. Free Press, p. 102–125.

Marks, G.; Hooghe, L.; Blank, K. 1996. European Integration from the 1980s: State-Centric v. MultiLevel Governance. *Journal of Common Market Studies* 34(3): 341–378.

McGowan, F.; Wallace, H. 1996. Towards a European Regulatory State. *Journal of European Public Policy* 3 (4):560–576.

Medema, S. 2004. *Public Choice and Deviance*. US: An Elgar Reference Collection.590p.

Melnikas, B. 2002. *Transformation*. Vilnius: Vega. ISBN 5-415-01637-6, p. 750.

Melnikas, B. 2005. Creation of Knowledge-based Economy in the European Union: the Main Typicalities and New Ideas of Clusterization. *Journal of Business Economics and Management* 6(2): 87–100.

Melnikas, B. 2008. Network-based International Economy. *Intellectual Economics* 1(3): 51–64.

Mickiewicz, T.; Radosevic, S. 2001. *Innovation Capabilities of the Six EU Candidate Countries: Comparative Data Based Analysis*. University College London, INNO-99-02. Available at: ftp://ftp.cordis.europa.eu/pub/innovationpolicy/studies/studies_six_candidate_countries_capabilities_2001.pdf.

Miles, I. 2004. *Innovation in Public Services*. Presentation at PRIME Conference. Manchester.

Minogue, M. 2005. *Apples and Oranges – Comparing International Experiences in Regulatory Reform*. Occasional Lecture 13, Bath: Centre for the Study of Regulated Industries.

Miravete, E.; Pern, J. 2000. *Innovation Complementarities and Scale of Production.* London: Mimeo p. 368

Mitrany, D. 1998. *A Working Peace System,* in Brent F. Nelsen and Alexander C-G. Stubb ed., The European Union Readings on the Theory and Practice of European Integration. London, p. 93–113.

Mohnen, P.; Mairesse, J.; Dagenais, M. 2004. Innovativeness: a Comparison Across Seven European Countries. *Economics of Innovation and New Technology* 13(1–2): 23–35.

Moravcsik, A. 1993. Preferences and Power in the European Community: A Liberal Intergovernmentalist Approach. *Journal of Common Market Studies* 3(4): 473–524.

Mytelka, L.; Smith, k. 2001. *Innovation Theory and Innvation Policy: Bridging the Gap*. DRUID Conference, Aalborg.

Nelson, R. 2002. Technology, Institutions, and Innovation Systems. *Research Policy* (31): 265–272.

Nelson, R.R. 2006a. *Economic Development from the Perspective of Evolutionary Economic Theory*. Working Papers in Technology Governance and Economic Dynamics 2. The Other Canon Foundation and Tallinn University of Technology, 1-17. Available at http://hum.ttu.ee/tg/.

Niossi, J. 1999. Fourth-Generation R&D: From Linear Models to Flexible Innovation. *Journal of Business Research* (45): 111–117.

OECD. 1971. Science, Growth and Society. Brooks Report, OECD, Paris.

OECD. 1980. Science, Growth and Society. Brooks Report, OECD, Paris p. 48.

OECD. 1988. New Technologies in the 1990s: A Socio-economic Strategy. Sundquist Report, OECD, Paris.

OECD. 1992. Technology and the Economy: The Key Relationships. OECD, Paris.

OECD. 1998. Technology, Productivity and Job Creation: Best Policy Practices. OECD, Paris.

Okimoto, D.I. 1990. *Between MITI and the Market: Japanese Industrial Policy for High Technology.* Stanford, California: Stanford University Press.

Okimoto, D.I. 1990. *Between MITI and the Market: Japanese Industrial Policy for High Technology*. Stanford, California: Stanford University Press.

Paul, A.; Alexe, I. 2012. Comparative Analysis of South Eastern Europe Economies Facing: The Crisis. Future Prospects for the Region. *Romanian Journal of European Affairs* 12(2).

Perez, C. 1986. *The New Technologies: An Integrated View. Republished* in 2009 in Working Papers in Technology Governance and Economic Dynamics19. The Other Canon Foundation and Tallinn University of Technology, 1–48. Available at http://hum.ttu.ee/tg/.

Perez, C. 2001. *Technological Change and Opportunities for Development as a Moving Target*. CEPAL Review (75): 109–130.

Perez, C. 2002. *Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Age*s. Cheltenham: Edward Elgar.

Perez, C. 2004. *Technological Revolutions: Paradigm Shift and Socio-Institutional Change.* In E.S. Reinert (ed.). Globalization: Economic Development and Inequality. Cheltenham, UK; Northampton, MA, USA: Edward Elgar 217–242.

Perez, C. 2010b. Technological Revolutions and Techno-Economic Paradigms. *Cambridge Journal of Economics* (34): 185–202.

Phaal, R.; O'Sullivan, E.; Routley, M.; Ford, S.; Probert, D. 2011. A Framework for Mapping Industrial Emergence. *Technological Forecasting & Social Change* (78): 217–230.

Piech, K.; Radosevic, S. 2006. *The Knowledge-Based Economy in Central and Eastern Europe: Countries and Industries in a Process of Change*. Basingstoke: Palgrave Macmillan.

Plebankiewicz, E. 2009. Contractor Prequalification Model Using Fuzzy Sets. *Journal of Civil Engineering and Management* 15(4): 377–385.

Podvezko, V. 2007. Determining the Level of Agreement of Expert Estimates. *International Journal of Management and Decision Making* 8(5/6): 586–600.

Podvezko, V. 2009. Application of AHP Technique. *Journal of Business Economics and Management* 10(2): 181–189.

Podvezko, V.; Podviezko, A. 2010. Dependence of Multi-criteria Evaluation Result on Choice of Preference Functions and Their Parameters. *Technological and Economic Development of Economy* 16(1): 143–158.

Powell, W. W.; Koput, W.K.; Smith-Doerr, L. 1996. Interorganizational Collaboration and the Locus of Innovation: Networks of Learning in *Biotechnology* (41): 116–145.

Putnam, R. 1988. Diplomacy and Domestic Politics: the Logic of Two-Level Games. *International Organization* 42(3): 427–460.

Radosevic, S. 2002a. Introduction: Building the Basis for Future Growth – Innovation Policy as a Solution. *Journal of International Relations and Development* 5 (4): 352–356.

Radosevic, S. 2006. *The Knowledge-Based Economy in Central and Eastern Europe: An Overview of Key Issues*. In K. Piech and S. Radosevic (eds). The Knowledge-Based Economy in Central and Eastern Europe: Countries and Industries in a Process of Change. Basingstoke: Palgrave Macmillan 31–53.

Radosevic, S. 2009. Policies for Promoting Technological Catch Up: Towards a Post Washington Approach. *International Journal of Institutions and Economies* 1 (1): 22–51.

Radosevic, S. 2011. *Challenges of Converging Innovation Policies in a Multi-Tier Europe: A Neo-Schumpeterian Perspective*. In S. Radosevic and A. Kaderabkova (eds). Challenges of European Innovation Policy: Cohesion and Excellence in Schumpeterian Perspective. Edward Elgar Publishers, forthcoming.

Ravichandran, J. 2000. Redefining Organizational Innovation: Towards Theoretical Advancements. *The Journal of High Technology Management Research* 10(2): 243–274.

Redding, S.; Venables, A.J. 2004. Economic Geography and International Inequality. *Journal of International Economics* 62(1): 53–82.

Reinert, E.S. 1999. The Role of the State in Economic Growth. *Journal of Economic Studies* 26 (4/5): 268–326.

Rothwell, R. 1992. Successful Industrial Innovation: Critical Factors for the 1990s. *R&D Management* 22(3): 221–239.

Rothwell, R. 2002. *Toward the Fifth-Generation Innovation Process*. In Henry, J. and Mayle, D. Eds, Managing innovation and change, London.

Rothwell, R.; Freeman, C.; Horlsey, A.; Jervis, V.T.P.; Robertson, A.B.; Townsend, J. 1974. SAPPHO updated: project SAPPHO phase II. *Research Policy* (3): 258–291.

Salant, W.S. 1989. *The Spread of Keynesian Doctrines and Practices* in the United States, in P. Hall (ed.), the Political Power of Economic Ideas Keynesianism Across Nations. Princeton University Press, Princeton p. 27–252.

Sanfrey, P. 2010. South-eastern Europe: lessons from the global economic crisis. European Bank for Restruction and Development. *Working Paper* No. 113

Schimmelfennig, F. 2001. The Community Trap: Liberal Norms. Rhetorical Action, and the Eastern Enlargement of the European Union, *International Organization* 55(1): 47–72.

Schimmelfennig, F.; Sedelmeier, U. 2002. Theorizing EU Enlargement: Research Focus, Hypotheses and the State of Research, *Journal of European Public Policy* 9(4): 500–528.

Sherwood, D. 2002. *Creating an Innovative Culture*. UK: Capstone Publishing p. 332.

Soete, L. 2007. From Industrial to Innovation Policy. Journal of Industry. *Competition and Trade* (7): 273–284.

South East Europe Regular Economic Report. 2012. The World Bank, Poverty Reduction and Economic Management Unit, Europe and Central Asia Region.

South East Europe Regular Economic Report. 2015. World Bank Calculations Based on Central Banks.

South East Europe Regular Economic Report. 2015. World Bank staff calculations and estimates based on national statistical offices.

Spinelli, A.; Rossi, E. 1998. *The Ventotene Manifesto*, in John Pinder ed. Altiero Spinelli and the British Federalists. Written by Beveridge, Robbins and Spinelli, (Federalist Trust), London, p. 73–85.

Steinmueller, W.E. 2002. Knowledge–based Economies and Information and Communication Technologies. *International Social Science Journal* (171): 141–154.

Straits, K. 2002. *Innovation in Singapore Organizations*. Singapore: Straits Knowledge p. 366

Tal, S.; Ingram, P. 2002. Management Science *INFORMS* 48 (12): 1517–1533.

Talmon, Y. 1972. *Family and Community in the Kibbutz*. Harvard University Press, Cambridge, MA.

Tan, B. S. 2004. The Consequences of Innovation. *The Public Sector Innovation Journal* 9(3): 23–39.

Tidd, J.; Bessant, J. R.; Pavitt, K. 2001. *Managing Innovation: Integrating Technological, Market and Organizational Change* No. 2. Chichester.

Tidd, J.; Bessant, J. R.; Pavitt, K. 2005. *Managing Innovation: Integrating Technological, Market and Organizational Change*. Hoboken: Wiley p. 155–172.

Tiits, M.; Kattel, R.; Kalvet, T.; Tamm, D. 2008. Catching Up, Forging Ahead or Falling Behind? Central and Eastern European Development in 1990–2005. Innovation: The *European Journal of Social Science Research* 21(1): 65–85.

Török, Á. 2007. Industrial Policy in the New Member Countries of the European Union: A Survey of Patterns and Initiatives since 1990. *Journal of Industry, Competition and Trade* (7): 255–271.

Török, Á. 2007. Industrial Policy in the New Member Countries of the European Union: A Survey of Patterns and Initiatives since 1990. Journal of Industry, *Competition and Trade* (7): 255–271.

Trott, P. 2002. *Innovation Management and New Product Development*. Harlow: Pearson Education.

Tunzelmann, N.; Nassehi, S. 2004. Technology Policy, European Union Enlargement, and Economic, Social and Political Sustainability. *Science and Public Policy* 31 (6): 475–483.

Turskis, Z.; Zavadskas, E. K.; Peldschus, F. 2009. Multi-criteria Optimization System for Decision Making in Construction Design and Management. *Engineering Economics* (1): 7–17.

UNCTAD. 1999a. The Science, Technology and Innovation Policy Review: Colombia. UNCTAD, New York and Geneva.

UNCTAD. 1999b. The Science, Technology and Innovation Policy Review: Jamaica. UNCTAD, New York and Geneva.

Urbanaviciene, V.; Kaklauskas, A.; Zavadskas, E. K. 2009b. The Conceptual Model of Construction and Real Estate Negotiation. *International Journal of Strategic Property Management* 13 (1): 53–70.

Urbanaviciene, V.; Kaklauskas, A.; Zavadskas, E. K.; Seniut, M. 2009a. The Web-based Real Estate Multiple Criteria Negotiation Decision Support System: A New Generation of Decision Support Systems. *International Journal of Strategic Property Management* 13 (3): 267–286.

Ustinovichius, L.; Zavadskas, E. K.; Podvezko, V. 2007. Application of a Quantitative Multiple Criteria Decision Making: Approach to the Analysis of Investments in Construction. *Control and Cybernetics* 36(1): 251–268.

Utterback, J. 1994. *Mastering the Dynamics of Innovation*. Harvard Business School Press, Boston. MA.

Van de Ven, A. H. 1989. *The Innovation Journey*. Oxford University Press, New York.

Van der Panne, G.; Van Beers, C.; Kleinknecht, A. 2003. Success and Failure of Innovation: A Literature Review. *International Journal of Innovation Management* 7(3): 309-338.

Verspagen. B. 1991. A New Empirical Approach to Catching Up or Falling Behind. *Structural Change and Economic Dynamics* 2 (2): 359–380.

Veugelers, R.; Mrak, M. 2009. *The Knowledge Economy and Catching-Up Member States of the European Union.* Report prepared for Commissioner's Potocnik's Expert Group: Knowledge for Growth. Available at http://ec.europa.eu/invest-inresearch/pdf/download_en/kfg_report_no5.pdf.

Webb, C. 1983. Theoretical Perspectives and Problems, in Hellen Wallace, William Wallace and Carol Webb, Policy-Making in the European Community. Second Edition, p. 1–41.

Weber, S. 1995. *European Union Conditionality*, in eds. Barry Eichengreen, Jeffry Frieden and Jürgen von Hagen, Politics and Institutions in an Integrated Europe, Berlin: Springer-Verlag, p. 193–220.

Yelle, L. E. 1979. The Experience Curve: Historical Review and Comprehensive Survey. *Decision Sci.* (10): 302–328.

Zavadskas, E. K.; Kaklauskas, A.; Peldschus, F.; Turskis, Z. 2007a. Multi-attribute Assessment of Road Design Solutions by Using the COPRAS Method. *The Baltic Journal of Road and Bridge Engineering* 2 (4): 195–203.

Zavadskas, E. K.; Vaidogas, E. R. 2008. Bayesian Reasoning in Management Decisions on the Choice of Equipment for the Prevention of Industrial Accidents. *Engineering Economics* (5): 32–40.

Zavadskas, E.; Viteikiene, M.; Saparauskas, J. 2007b. Sustainable Development Assessment of Cities and Theirs Residential Districts. *Ekologija* (53): 49–54.

Zavrl, M. S.; Zarnic, R.; Selih, J. 2009. Multicriterial Sustainability Assessment of Residential Buildings. *Technological and Economic Development of Economy* 15(4): 612–630.

List of Scientific Publications by the Author on the Topic of the Dissertation

Articles in the reviewed scientific journals

Peyravi, B. 2016. Experiences of Baltic Countries in Innovation Activities: Lesson for South-East European Countries. *Journal of Business and Economic Policy*. New York. ISSN 2375-0766 (Print), 2375-0774 (Online), Vol: 3, No: 4.

Peyravi, B. 2015. South East European Countries: the Needs of Innovations in the Context of Enlargement of the European Union. *Viešasis administravimas*. Vilnius: Lietuvos viešojo administravimo lavinimo institucijų asociacija. ISSN 1648-4541. 2015, Nr. 3(47)-4(48), p. 112–120.

Peyravi, B. 2015. Innovation Activities of Enterprises in Economic Space of the European Union. *Viešasis administravimas*. Vilnius: Lietuvos viešojo administravimo lavinimo institucijų asociacija. ISSN 1648-4541. 2015, Nr. 1(45)–2(46), p. 119–124

Peyravi, B. 2012. Social and Economic Development in the South-East European Countries: New Challenges. *Viešasis administravimas*. Vilnius: Lietuvos viešojo administravimo lavinimo institucijų asociacija. ISSN 1648-4541. 2012, Nr. 4(36), p. 63–74.

Articles in other editions

Peyravi, B. 2016. *Assessment of National Innovation Performance of the Baltic Countries.* The 9th International Scientific Conference "Business and Management 2016", May 12–13, 2016, Vilnius, Lithuania. Vilnius: Technika, 2016. ISSN 2029-4441, p. 1–8.

Peyravi, B. 2014. *The Nexus Between Ageing Population, Innovation, Entrepreneurship and Sustainable Development*. The 8th international scientific conference "Business and Management 2014". Vilnius: Technika, 2014. ISSN 2029-4441, p. 434–440.

Peyravi, B. 2014. *Variable Conditions of Enlargement Process of European Union: Scope, Europanization Process, Social Integration.* 17-oji Lietuvos jaunųjų mokslininkų konferencija "Mokslas – Lietuvos ateitis" 2014 metų teminė konferencija "Verslas XXI amžiuje", 2014 m. vasario 6 d. Vilnius: Technika, 2014. ISSN 2029-7149, p. 173–180.

Summary in Lithuanian

Įvadas

Problemos formulavimas

Daugybė inovatyvių veiklų Europos socialinėje ir ekonomikos erdvėje susiduria su naujais iššūkiais. Atsiranda nauji poreikiai pagerinti inovacijų vadybą, remiantis tarptautiniu gerosios praktikos perdavimu, kuris galėtų būti panaudotas inovatyvioms veikloms visose socialinio ir ekonominio gyvenimo srityse plėtoti šiuolaikinėmis Europos integracijos ir galimos Europos Sąjungos plėtros sąlygomis. Inovacijų vadyboje tarptautinis gerosios praktikos perdavimas stokoja teorinių sprendinių ir modelių. Šis trūkumas apibūdintas kaip svarbi Europos socialinės ir ekonominės erdvės mokslinė ir praktinė problema, taip pat kaip ypač svarbi Pietryčių Europos šalių, kurios turėtų taikyti daugybę Centrinės ir Rytų Europos šalių, įskaitant Baltijos šalis, gerosios praktikos ir pažangios patirties perdavimo pavyzdžių, problema. Naujo požiūrio tarptautinio gerosios inovacijų vadybos praktikos perdavimo poreikį lemia:

- šalių kandidačių ir galimų kandidačių ribota inovacijų vadybos patirtis, siekiant naudos verslui ir viešajam interesui;

- šalių kandidačių ir galimų kandidačių inovacijų paramos sistemos ribotas efektyvumas;

- stoka teorinio pagrindo, kuris galėtų paremti inovacijų infrastruktūrą, siekiant geresnių rezultatų inovacijų srityje, bei pagerinti supratimą apie inovacijų vadybos patirties poreikį, aktualų nacionalinei socialinei ir ekonominei plėtrai;

‒ stoka vertinimo metodų, skirtų inovacijų vadybos pažangiai patirčiai nagrinėti, ir jų perkėlimo galimybių į šalis kandidates ir galimas kandidates Europos Sąjungos plėtros sąlygomis.

Darbo aktualumas

Europos Sąjungos plėtros procesams pasiekus Pietryčių Europą, šio regiono šalys kandidatės (Albanija, Juodkalnija, Serbija, Makedonija) ir galimos šalys kandidatės (Bosnija ir Hercegovina, Kosovas) pirmiausia privalo atrasti individualų planą inovacijų srityje; antra, tai privalo būti aptarta visuomeniniu, valstybiniu ir atskirų institucijų lygmeniu; trečia, nedelsiant skatinti būtinybę Vyriausybei atnaujinti esamas programas; ketvirta, pabandyti suderinti turinį vietos lygmeniu su Europos planais. Be to, svarbu išanalizuoti inovacijų būtinybę ir sudaryti atitinkamas administracines struktūras.

Šalių kandidačių ir galimų kandidačių inovacijų poreikio Europos Sąjungos plėtros sąlygomis tyrimas kartu su Centrinės ir Rytų Europos inovacijų vadybos gerosios praktikos ir pažangios patirties vertinimu, siekiant ją perkelti į šalis kandidates ir galimas kandidates, suteikia disertacijai prasmės ir svarbos.

Tyrimų objektas

Centrinės ir Rytų Europos tarptautinis inovacijų vadybos gerosios praktikos perdavimas, ypač inovatyvių veiklų patirties ir inovacijų vadybos gerosios praktikos perdavimas, Pietryčių Europos šalims.

Darbo tikslas

Disertacijos tikslas – ištirti pagrindinius ilgalaikius tarptautinio inovacijų vadybos gerosios praktikos perdavimo procesus šiuolaikinių Europos integracijos ir Europos Sąjungos plėtros kontekste ir, atsižvelgiant į šį kontekstą, sukurti teorinį tarptautinio gerosios inovacijų vadybos praktikos perdavimo modelį, ypač iš Centrinės ir Rytų Europos į Pietryčių Europos šalis.

Darbo uždaviniai

Tikslui pasiekti keliami šie uždaviniai:

1. Atlikti mokslinės inovacijų, inovacijų vadybos ir viešosios inovacijų paramos srities literatūros analizę ir atskleisti inovacijų vadybos gerosios praktikos tarptautinio perdavimo galimybes ir šalių kandidačių bei galimų kandidačių poreikį, siekiant paspartinti integraciją į Europos Sąjungą per stojimo procesą.

2. Apžvelgti Centrinės ir Rytų Europos šalių inovacijų vadybos gerąją praktiką, siekiant atskleisti šalių kandidačių ir galimų kandidačių inovatyvių veiklų tobulinimo modelius ir matmenis.

3. Sukurti teorinį modelį ir pasirinkti tinkamus tyrimų metodus, būtinus Centrinės ir Rytų Europos šalių gerosios praktikos ir pažangios patirties inovacijų vadybos srityje

kiekybiniam vertinimui atlikti bei inovacijų perdavimo šalims kandidatėms ir galimoms kandidatėms poreikiui nustatyti.

4. Atlikti empirinius tyrimus, patvirtinančius tarptautinio gerosios inovacijų vadybos praktikos perdavimo modelio praktinį pritaikymą, ir atskleisti jo taikymo galimybes bei ribojimus.

Tyrimų metodika

Nustatant inovacijų vadybos problematiką ir tarptautinio inovacijų vadybos gerosios praktikos perdavimo poreikį, naudojama kritinė literatūros apžvalga, kartu ją interpretuojant ir konceptualizuojant. Tarptautinio gerosios praktikos perdavimo technikų apžvalga atlikta remiantis mokslinės medžiagos analize, priminių ir antrinių duomenų analize, statistinių duomenų lyginamąja analize, daugiakriteriu vertinimu, ekspertų apklausa, koreliacinės analizės metodu. Duomenims normalizuoti perspektyvaus tarptautinio inovacijų vadybos gerosios praktikos perdavimo modelio 1 ir 2 lygmenimis taikomi SAW daugiakriterio vertinimo ir koreliacinės analizės metodai. Modeliui aprobuoti atliekami empiriniai tyrimai. Gauti rezultatai interpretuojami remiantis grafinio apdorojimo ir loginės analizės metodais.

Darbo mokslinis naujumas

Mokslinis naujumas grindžiamas disertacinio darbo išvadomis:

1. Apibrėžus naują tyrimų lauką, inovacijų vadybos gerosios praktikos perdavimo srityje buvo sukurta reikšminga pažangios patirties perdavimo poveikio vertinimo bazė.

2. Nustatyti bendri visoms Europos Sąjungos šalims kandidatėms bei galimoms kandidatėms ir ypač Pietryčių Europos valstybėms tarptautinio inovacijų vadybos gerosios praktikos perdavimo būdai, sudarantys naujas galimybes pasiekti geresnių rezultatų plėtojant inovacines veiklas.

3. Kiekybiniai veiksniai kartu su inovacijų vadybos gerosios praktikos perdavimo metodu, grindžiami daugiakriteriu vertinimu, sudaro sąlygas sukurti ir taikyti vertinimus, skirtus Centrinės ir Rytų Europos šalių inovacijų vadybos pažangiai patirčiai perduoti šalims kandidatėms ir galimoms Europos Sąjungos kandidatėms, ypač Pietryčių Europos šalims, kiekvieno socialinio ir ekonomikos sektoriaus bei pagrindinių institucijų lygmeniu.

4. Sukurtasis kompleksinis tarptautinio gerosios inovacijų vadybos praktikos perdavimo modelis yra grindžiamas teoriniais argumentais ir praktine patikra. Modelis sukuria prielaidas sisteminiam Baltijos valstybių gerosios praktikos perdavimui Europos Sąjungos šalims kandidatėms ir galimoms kandidatėms, plėtojant strateginius ir inovacijų vadybos procesus bei siekiant paskatinti socialinę ir ekonominę integraciją stojimo procesu. Yra parengtas gerosios praktikos perkėlimo algoritmas, užtikrinantis strategines įžvalgas, ir nustatytos perdavimo proceso strategijos formavimo kryptys. Modelio struktūra grindžiama naujais sprendimais ir kiekybinio vertinimo metodais.

Darbo rezultatų praktinė reikšmė

Atlikto tyrimo rezultatai gali būti pritaikyti Centrinės ir Rytų Europos teigiamos inovacijų vadybos patirčiai perduoti Pietryčių Europos šalims. Tai paveiks socialinės ir ekonominės plėtros prioritetus ir verslo poreikius inovacijų srityje. Praktinis pateikto modelio pritaikymas yra svarbus Pietryčių Europos šalių socialiniam ir ekonominiam sektoriui, taip pat pagrindinėms institucijoms. Tyrimų rezultatai yra tinkami naudoti vadybos ir ekonomikos studijų programose.

Ginamieji teiginiai

1. Aukštas našumo lygis ir tvarus ekonomikos augimas gali būti pasiektas taikant tikslinę inovacijų politiką ir novatorišką verslą. Dėl inovacijų strateginės ir kompleksinės prigimties perduoti inovacijų vadybos gerąją praktiką yra būtina, norint pasiekti didesnį inovacijų veiklos rezultatyvumą. Šis požiūris yra gyvybiškai svarbus Europos Sąjungos kandidatėms ir būsimoms Europos Sąjungos šalims kandidatėms, siekiant paspartinti integracijos procesus ir padidinti bendrosios Europos Sąjungos rinkos konkurencingumą.
2. Siekiant sumažinti riziką ir paskatinti inovacijų procesus, visuose gerosios praktikos perdavimo etapuose svarbu atlikti sistemingą ir veiksmingą vertinimą.
3. Siūlomi kiekybiniai vertinimo metodai ir modelis turėtų būti taikomi tiesiogiai ir netiesiogiai inovacijų poreikiams nustatyti, kuris gali būti apibrėžiamas kaip inovatyvių veiklų pobūdžio ir išteklių paskirstymo pasikeitimas.

Darbo rezultatų aprobavimas

Disertacijos tematika paskelbti 7 moksliniai straipsniai, parengta 10 pranešimų, 3 iš jų – tarptautinėse konferencijose.

Disertacijos struktūra

Disertaciją sudaro įvadas, trys skyriai, bendrosios išvados, literatūros šaltinių sąrašas, autoriaus publikacijų disertacijos tema sąrašas, santrauka lietuvių kalba. 1 paveiksle pateikta disertacijos loginė schema. Darbo apimtis – 98 puslapiai, neskaitant priedų. Tekste panaudotos 13 formulių, 5 paveikslai, 26 lentelės. Rašant disertaciją buvo panaudoti 205 literatūros šaltiniai.
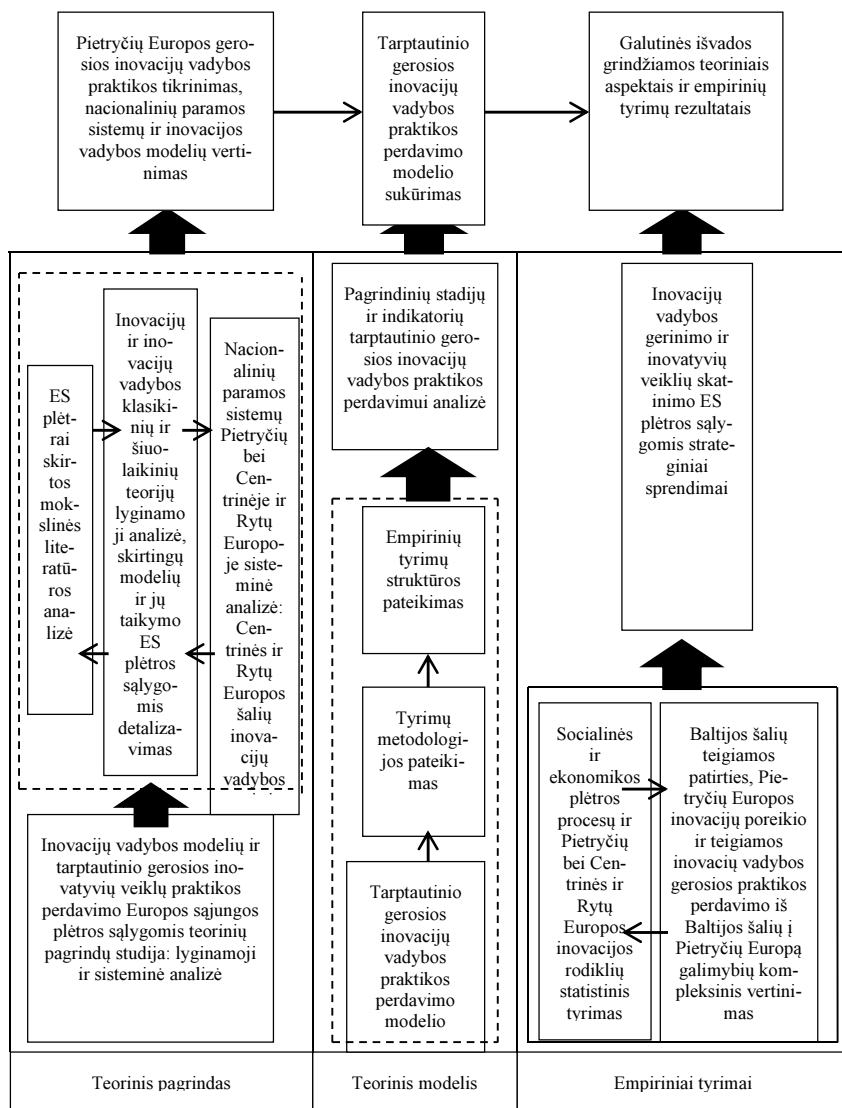
S.0.1 pav. Disertacijos struktūra
Šaltinis: sukurta autoriaus

1. Tarptautinio gerosios inovacijų vadybos praktikos Europos Sąjungos sąlygomis perdavimo teorinių pagrindų studija

Šiame skyriuje dalyje pateikiama Europos Sąjungos plėtros proceso apžvalga, apibūdinamas inovacijų vaidmuo ir jų taikymas ES plėtros sąlygomis. Be to, šiame skyriuje

diskutuojama būtinybė skatinti tarptautinį inovacijų vadybos bendradarbiavimą bei būtinybė perkelti gerąją praktiką iš Centrinės ir Rytų Europos į Europos Sąjungos šalis kandidates ir galimas kandidates sėkmingoms inovatyvioms veikloms skatinti, siekiant išspręsti kritinius inovacijų vadybos iššūkius.

Be to, šioje dalyje tiriamos koncepcijos ir teorijos, susijusios su inovacijomis, inovacijų vadyba, kuri traktuojama kaip ypatingas tvarios socialinės ir ekonominės plėtros veiksnys Europos Sąjungos plėtros kontekste:

– ES plėtra: teoriniai ES plėtros modeliai, pagrindiniai plėtros tendencijos ir Europos Sąjungos plėtros prioritetai.

– Inovacijų ir inovacijų vadybos klasikinės ir šiuolaikinės teorijos, jų taikymas Europos Sąjungos plėtros sąlygomis.

– Inovacijų poreikis bei jų taikymas Europos Sąjungos plėtros sąlygomis.

– Inovacijų vadyba ir nacionalinės inovacijų paramos sistemos: Centrinės ir Rytų Europos šalių patirtis inovacijų vadyboje bei gerosios praktikos perdavimas kaip plėtros prioritetas.

– Centrinės ir Rytų Europos šalių patirtis inovacijų vadyboje.

– Gerosios praktikos perdavimas kaip plėtros prioritetas.

Apibendrinant skirtingus mokslinius siūlymus, aptariami iššūkiai, su kuriais susiduria šalys kandidatės prisijungimo proceso metu. Akcentuojama inovacijų, inovacijų vadybos ir efektyvios inovacijų paramos sistemos svarba siekiant atrasti tvarų būdą integracijos problemoms išspręsti. Pietryčių Europos šalys, kaip kandidatuojančios šalys, turi plėtoti tvarią inovacijų politiką siekdamos paspartinti socialinę ir ekonominę integraciją į ES. Šiame kontekste šioje dalyje analizuojamos inovacijų bei inovacijų vadybos klasikinė ir šiuolaikinė teorijos, inovacijų paramos sistemos struktūra ir pagrindinių institucijų ir subjektų vaidmuo Centrinėje ir Rytų Europoje bei Pietryčių Europoje. Be to, gerosios inovacijų vadybos praktikos perdavimo būtinybė yra nuodugniai paaiškinta per plėtros prioritetizavimo prizmę. Skyriuje pateikiamos bendros tarptautinio gerosios inovacijų vadybos praktikos perdavimo modelio įžvalgos, kuris pristatomas kitame skyriuje. Visa pirmos dalies studija perteikia inovacijas socialinės ir ekonominės plėtros aspektu, kartu akcentuojama gerosios inovatyvių veiklų praktikos perdavimo būtinybė atsižvelgiant į ES integracijos procesus.

2. Numatomas teorinis modelis ir empirinių tyrimų metodologija

Šiame skyriuje tikrinamas ir nuodgniai aiškinamas tarptautinio gerosios inovacijų vadybos praktikos perdavimo modelis (ITMGPIM – *International Transfer Model of Good Practices in Innovation Management*). Jis analizuoja institucijų įsitraukimo į inovacijų paramos sistemą stoką, vertina pažangią inovacijų vadybos patirtį kiekvienam Centrinės ir Rytų Europos šalių socialiniame ir ekonominiame sektoriuje, nustato Europos Sąjungos šalių kandidačių ir galimų kandidačių inovacijų poreikį, norint pateikti strategines gerosios praktikos perdavimo proceso įžvalgas pagal struktūrinius komponentus bei jų poveikį socialinei ir ekonominei plėtrai ES plėtros sąlygomis.

Literatūros apžvalga atskleidžia mokslinę problemą ir pagrindžia tarptautinio gerosios inovacijų vadybos praktikos perdavimo modelio būtinybę. Skyriuje siekiama bend-

rai apibūdinti modelį, empirinių tyrimų metodologiją ir struktūrą. Pagrindinis modelio tikslas – sukurti elementų ir sąryšių sistemą, siekiant įvertinti inovatyvios veiklos poreikį kiekviename Europos Sąjungos šalių kandidačių ir galimų kandidačių socialiniame ir ekonomikos sektoriuje bei būtinybę perduoti Centrinės ir Rytų Europos šalių gerąją inovacijos vadybos praktiką. Šiuo atveju siekiama, kad modelis būtų pritaikomas visoms galimoms šalims kandidatėms. Modelį sudaro keli lygmenys (žr. S.0.1 pav.).

Pirmu lygmeniu siekiama įvertinti inovacijų infrastruktūrą Centrinėje ir Rytų Europoje, siekiant išgryninti inovacijų paramos sistemos struktūrą, pagrindinių subjektų misiją, pagrindinių institucijų ir jų misijų įsitraukimą ir pateikti bendrą elementų tarpusavio sąryšio suvokimą. Antra, įvertinti Centrinės ir Rytų Europos inovacijų vadybos pažangią patirtį kiekviename socialiniame ir ekonomikos sektoriuje. Trečia, išanalizuoti Centrinės ir Rytų Europos socialinę ir ekonominę plėtrą bei jos sąryšį su inovatyviomis veiklomis, norint pateikti duomenis, kurie leistų įvertinti gerosios inovacinių veiklų patirties perdavimo laikotarpį siekiant socialinės ir ekonominės naudos.

Antru lygmeniu siūloma įvertinti institucinio įsitraukimo į Europos Sąjungos šalių kandidačių ir galimų kandidačių inovacijų paramos sistemą stoką. Be to, šiuo lygmeniu siekiama įvertinti inovatyvių veiklų poreikį kiekviename Europos Sąjungos šalių kandidačių ir galimų kandidačių socialiniame ir ekonomikos sektoriuje ir būtinybę perkelti gerąją inovacijų vadybos praktiką iš Centrinės ir Rytų Europos. Šiuo lygmeniu analizuojamas inovatyvios veiklos rezultatų ir Europos Sąjungos šalių kandidačių bei galimų kandidačių socialinės ir ekonominės plėtros sąryšis.

Trečiu lygmeniu pateikiamos strateginės įžvalgos, skirtos patirties perkėlimo procesui, atsižvelgiant į struktūrinius komponentus bei jų įtaką socialiniam ir ekonomikos išsivystymui ES plėtros sąlygomis.

Tyrimų metodologija buvo pasiūlyta siekiant kompleksiškai įvertinti inovacijų paramos sistemos politiką ir jos poveikį inovatyvių veiklų rezultatams, kartu įvertinti Centrinės ir Rytų Europos bei Pietryčių Europos regionų socialinį ir ekonominį išsivystymą, inovacijų poreikį ir galimybes perkelti gerąją inovacijų vadybos praktiką iš Centrinės ir Rytų Europos į Europos Sąjungos šalis kandidates ir galimas kandidates. Tyrimų metodologija apima kokybinį ir kiekybinį metodus. Pastaruoju metu sudėtingų ekonominių ar socialinių procesų kiekybiniam vertinimui vis dažnai taikomas daugiakriteris metodas.

Metodo esmė ta, kad ekspertai analizuoja problemą logiškai, kiekybiškai vertindami ir įdėmiai apdorodami duomenis. Įprasta, kad ekspertų nuomonės yra skirtingos, kartais priešingos. Būtina nustatyti ekspertų nuomonių suderinamumo laipsnį. Taigi dėl šios priežasties taikomas daugiakriteris vertinimo metodas. Dviejų ekspertų sutapimas gali būti išreikštas koreliacijos koeficientu, o esant didesniam ekspertų skaičiui suderinamumo laipsnis gali būti išreikštas konkordancijos koeficientu (W).

Vertinimo rezultatai gali būti taikomi praktikoje, kai ekspertų vertinimų tinkamumo lygis yra aukštas. Rezultatai gali būti apibūdinti konkordancijos koeficientu, kuris apskaičiuojamas suranguojant lyginamus objektus (nuomones).
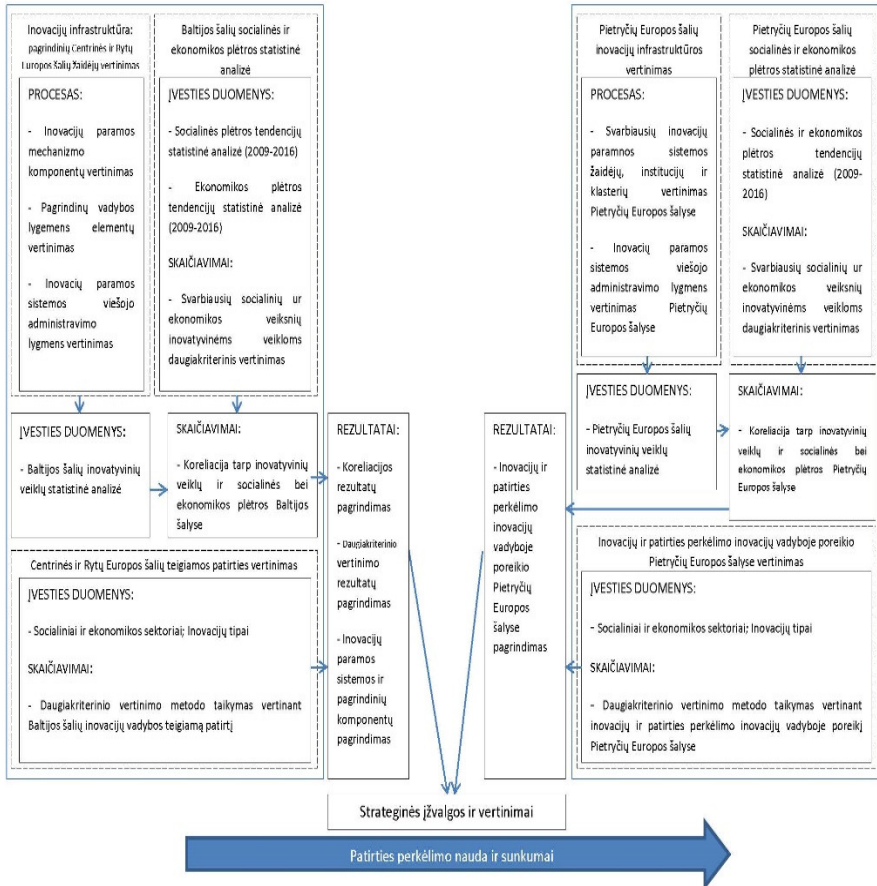
S.2.1 pav. Inovacijų vadybos žinių perkėlimo modelis
Šaltinis: parengta autoriaus

Rangavimas yra procesas, kuriuo metu svarbiausias indeksas gauna rangą 1. Antras pagal svarbumą – 2 ir t. t., o paskutinis – rangą *m*. Vienodi indeksai gauna analogišką rangą – abiejų aritmetinį vidurkį. Konkordancijos koeficiento dispersijos idėja siejama su kiekvieno indekso rangų suma lyginant su visų ekspertų rangais:

$$c_i = \sum_{j=1}^{r} c_{ij}, \left(i = 1,....., m\right).$$ (S.2.1)

Tai išreiškiama c_i nuokrypiu lyginant su vidutine reikšme $\bar{c}$ ir S (dispersija):

$$S = \sum_{i=1}^{m} \left(c_i - \bar{c}\right)^2.$$ (S.2.2)

Vidutinė reikšmė $\bar{c}$ apskaičiuojama pagal formulę:

$$\bar{c} = \frac{\sum\limits_{i=1}^{m} c_i}{m} = \frac{\sum\limits_{i=1}^{m}\sum\limits_{j=1}^{r} c_{ij}}{m} .$$ (S.2.3)

Kai ekspertai visus indeksus įvertina vienodai, svarbiausias indeksas gautų rangą 1, o visų indeksų rangų suma sudarytų r. Antras pagal svarbumą indeksas – $2r$ ir t. t., paskutinis indeksas – mr. Tai idealaus suderinamumo pavyzdys. Tokiu atveju dispersija S turėtų maksimalią galimą reikšmę:

$$S_{\max} = \sum\limits_{i=1}^{m}\left(ri - \frac{1}{2}r(m+1) \right)^2 = \frac{r^2 m\left(m^2 - 1 \right)}{12} .$$ (S.2.4)

Konkordancijos koeficientas yra dispersijos S ir jos maksimalios reikšmės $S_{\max}$ santykis:

$$W = \frac{12S}{r^2 m\left(m^2 - 1 \right)} .$$ (S.2.5)

Kai ekspertų nuomonės suderintos, konkordancijos koeficiento W reikšmė yra artima 1, kai nuomonės išsiskiria, W artimas 0.

Konkordancijos koeficientas gali būti naudojamas vertinant ribotas reikšmes, kurios rodytų, kad ekspertų nuomonės suderintos. Objektų numeris $m > 7$. Konkordancijos koeficiento reikšmingumas gali būti rašomas taip:

$$x^2 = Wr(m-1) = \frac{12S}{rm(m+1)} ,$$ (S.2.6)

čia $x^2 > x_{kr}^2$ – ekspertų nuomonės yra suderintos; SAW (*Simple Additive Weighting*) – paprasto pridėtinio svorio metodas.

Renkantis optimalią nuomonę, būtina atlikti daugiafaktorį vertinimą. Būtina apskaičiuoti visų indeksų sumą su svoriais S_j kiekvienam iš $j - m$ objektų:

$$Sj = \sum\limits_{i=1}^{m} \omega_i \, \tilde{r}_{ij} ,$$ (S.2.7)

čia ω_i – i indekso svoris; $\tilde{r}_{ij}$ – i indekso j objekto su svoriu reikšmė

$$\tilde{r}_{ij} = \frac{r_{ij}}{\sum\limits_{j=1}^{n} r_{ij}} .$$ (S.2.8)

Didžiausia S_j reikšmė nurodo nuomonę tam tikro eksperto, kuris optimaliai išreiškia visų ekspertų nuomonę.

Koreliacijos koeficientas parodo linijinės priklausomybės tarp dviejų kintamųjų formą ir stiprumą. Jo reikšmė svyruoja nuo –1 iki +1. Kuo stipresnis ryšys, tuo absoliučioji reikšmė artimesnė 1. Nulinė koreliacija rodo, kad tarp kintamųjų nėra linijinės priklausomybės. Koeficientas gali būti teigiamasis arba neigiamasis. Tokiu atveju linijinė priklausomybė yra stipri, bet priešinga. Pagrindinis metodo funkcionalumas – galimybė atsakyti į šiuos klausimus:

− Ar egzistuoja ryšys tarp dviejų kintamųjų?

− Jeigu taip, ar gali šis sąryšis būti išreikštas lygtimi?

− Ar galima lygtį naudoti prognozavimo tikslais?
Prielaidos:

− (*x, y*) dviejų kintamųjų pavyzdys;

− *x* ir *y* pateikimas yra normalus.
Taškinė diagrama leidžia sukurti grafiką. kai horizontalioji ašis žymima *x*, o vertikalioji – *y*.

Nors puikią koreliaciją yra lengva iššifruoti, nuspėti silpnesnės koreliacijos koeficientą sudėtinga. Tokiu atveju taikomas koreliacijos matematinis vertinimas – Pearsono *r* koeficientas. Koreliacijos koeficientas apskaičiuojamas pagal tolesnę formulę:

$$r = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{n(\sum x^2) - (\sum x)^2} \sqrt{n(\sum y^2) - (\sum y)^2}}.$$ (S.2.9)

Koreliacijos koeficiento rezultatai:

− −1 > *r* > +1;

− tobulai teigiamai linijinei priklausomybei, *r* = 1;

− tobulai neigiamai linijinei priklausomybei, *r* = – 1;

− nesant linijinei priklausomybei *r* = 0.
Hipotezė gali būti patikrinta taikant *t* statistiką:

$$t = \frac{r}{\sqrt{\frac{1 - r^2}{n - 2}}}.$$ (S.2.10)

Esant nulinei hipotezei, *t* statistika turi *n* – 2 laisvės laipsnį.

Modelio kiekybinė struktūra išsprendžia inovacijų vadybos patirties perkėlimo iššūkius. Pavyzdžiui, kiekybiniu vertinimu grindžiamas modelis leidžia įvertinti inovacijų vadybos patirties perkėlimo poreikį kiekviename Pietryčių Europos šalių socialiniame ir ekonomikos sektoriuje, siekiant tai suderinti su Centrinės ir Rytų Europos šalių inovacijų vadybos pažangia patirtimi. Siūlomas algoritmas sudaro galimybes inkorporuoti pasekmes į strategijų plėtojimą patirčiai perkelti.

3. Tarptautinio gerosios inovacijų vadybos praktikos Europos Sąjungos sąlygomis perdavimo empiriniai tyrimai: perdavimo iš Centrinės ir Rytų Europos į Pietryčių Europos šalis atvejo modeliavimas

Šiame skyriuje siūlomas modelis tikrinamas remiantis empiriniais tyrimais, kurie įvertina pažangą kiekvieno Centrinės ir Rytų Europos socialinio ir ekonominio sektoriaus inovacijų vadybos patirtį ir nustato Europos Sąjungos šalių kandidačių ir galimų kandidačių inovacijų poreikį, siekiant pateikti gerosios praktikos perdavimo proceso strategines įžvalgas. Be to, yra paaiškinta Centrinės ir Rytų Europos bei Europos Sąjungos šalių kandidačių ir galimų kandidačių socialinė ir ekonominė plėtra bei jos sąryšis su inovatyvių veiklų rezultatais, siekiant pateikti duomenis, skirtus laikui vertinti gerosios inovatyvių veiklų patirties perdavimo socialinės ir ekonominės naudos tikslais. Empiriniai tyrimai patvirtino modelio tinkamumą perduoti gerąją Centrinės ir Rytų Europos inovacijų vadybos praktiką Europos Sąjungos šalims kandidatėms ir galimoms kandidatėms bei nustatė jų plėtojimo poreikius ir galimybes. Remiantis rezultatais buvo pasiūlyta galimybių matrica inovacijų vadybos patirčiai perduoti (S.3.2 pav.).

Siūloma matrica suteikia galimybę išdėstyti gautus rezultatus viename modelyje. Matrica pritaikoma atsirenkant patirties perdavimo procesus remiantis empirinių tyrimų rezultatais. Inovacijų vadybos patirties perdavimas gali būti patobulintas sukuriant ir pritaikant vertinimus ir priemones, remiantis siūlomais principais. Pavyzdžiui, pasirinktų veiksnių konvergencija matricos vidurio link atskleidžia patirties perdavimo prioritetus ir poreikius pasirinktuose sektoriuose bei inovacijų srityse.

Rezultatai apima ne tik atstovaujančio eksperto nuomonę, bet apima ir kitų ekspertų vertinimus. Rezultatai žaliojoje zonoje turėtų būti traktuojami kaip esminiai ir prioritetiniai patirčiai perkelti. Oranžinės zonos rezultatai nurodo antrinius patirties perkėlimo procesus, o raudonojoje zonoje rodomi rezultatai neturi patirties perkėlimo poreikio.

Buvo atliktas socialinių ir ekonomikos statistikos rodiklių plėtojimo procesų ir inovatyvių veiklų palyginimas Pietryčių Europos bei Centrinės ir Rytų Europos šalyse. Šio tyrimo objektas – įvertinti svarbiausius socialinius ir ekonomikos veiksnius, siekiant nustatyti jų sąryšį su inovatyvių veiklų rezultatais (žr. S.3.1 lentelę). Rezultatai turi būti įvertinti kaip pateikta toliau (rezultatai pateikti disertacijos 3.1 dalyje).

S.3.1 lentelė. Socialinių ir ekonominių veiksnių bei inovatyvios veiklos rezultatų sąryšio vertinimo skalė, sudaryta remiantis siūlomu indeksu

Lygiai	Didelės priklausomybės veiksniai	Reikšmingi veiksniai	Mažai susiję veiksniai
Indeksas	(16–50]	(6–15]	≤ 5
Koreliacijos rezultatai	$0,6 \leq r \leq 1$	$0,4 \leq r \leq 0,59$	$r \leq 0,39$
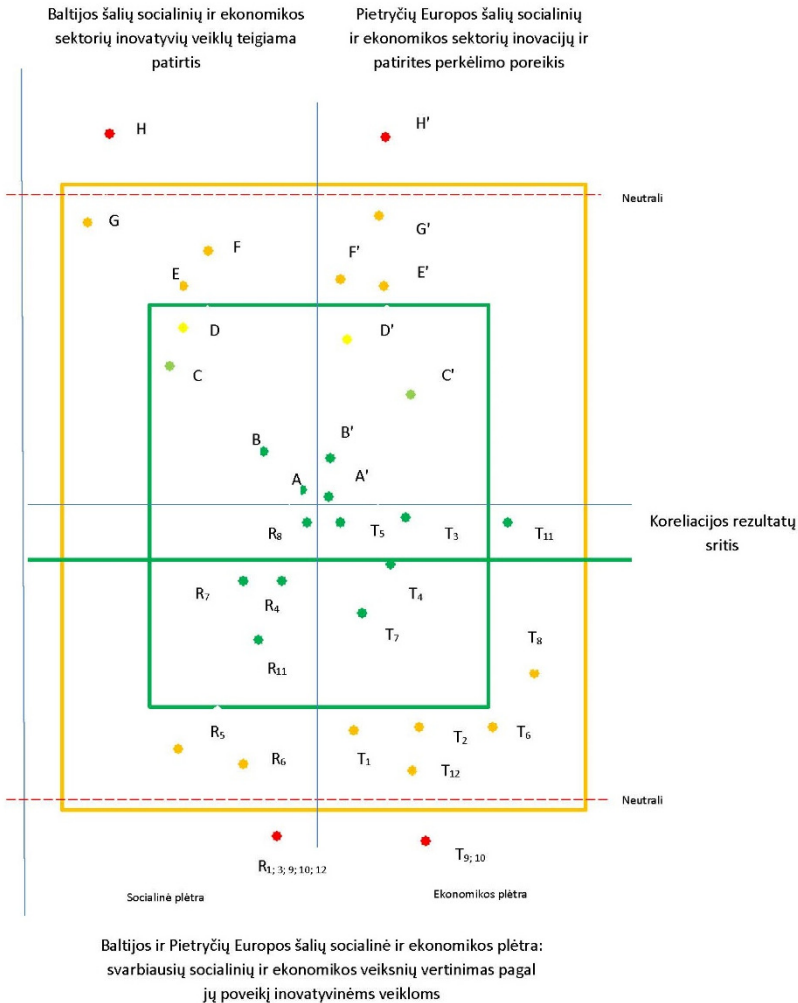
S.3.2 pav. Inovacijų vadybos patirties reikšmingumas sprendžiant vadybos
procesų praktinius iššūkius

Norint įvertinti svarbiausius socialinius ir ekonomikos veiksnius bei jų sąryšį su
inovatyvios veiklos rezultatais, buvo ištirti pasirinktų veiksnių pokyčiai per 2009–2016
metus. Gauti rezultatai gali būti įvertinti taip:
- kai socialinės ir ekonominės plėtros indeksas 16–50, veiksniai yra labai susiję;
- kai plėtros indeksas 6–15, veiksniai yra reikšmingi;
- kai plėtros indeksas mažesnis negu 5, veiksniai yra mažai susiję.
Koreliacijos vertinimas gali būti traktuojamas taip:
- kai koreliacijos reikšmė 0,99–0,7, yra didelė priklausomybė;

- kai koreliacijos reikšmė 0,69–0,40, yra teigiama priklausomybė;
- kai koreliacijos reikšmė 0,4–0,01, yra silpna priklausomybė.

Taigi toliau nagrinėjama teigiama skirtingų inovacijų rūšių ir jų vadybos patirtis, Baltijos šalių ekonomikos ir socialiniai sektoriai, taip pat Pietryčių šalių inovacijų poreikis. Tyrimų rezultatai priklauso nuo inovacijų vadybos patirties kiekviename socialiniame ir ekonomikos sektoriuje. Taigi rezultatai suteikia galimybę įvertinti šias išvadas, siekiant nustatyti patirties perkėlimo poreikį kiekviename sektoriuje ir nustatyti inovacijų vadybos perkėlimo proceso prioritetus. Rezultatai turi būti įvertinti šiuo būdu (rezultatai pateikiami disertacijos 3.2 poskyryje).

S.3.2 lentelė. Baltijos šalių inovacijų vadybos teigiamos patirties vertinimo skalė. Pietryčių Europos šalių inovacijų ir jų vadybos poreikio vertinimas remiantis siūlomu indeksu

Lygiai	Inovacijos vadybos patirties perkėlimo pageidaujami sektoriai (žalioji zona)	Inovacijų vadybos patirties perkėlimo antriniai sektoriai (oranžinė zona)	Nėra inovacijų vadybos patirties ar poreikio (raudonoji zona)
Indeksas	(25–50]	(24–5]	(4–0]

Gauti rezultatai gali būti traktuojami taip:
- kai A, A' indeksas 45–50,
- kai B, B' indeksas 40–44,
- kai C, C' indeksas 35–39,
- kai D, D' indeksas 30–34,
- kai E, E' indeksas 25–29,
- kai F, F' indeksas 15–24,
- kai G, G' indeksas 5–14,
- kai H, H' indeksas 0–4.

Gerosios inovacijų vadybos praktikos perdavimas galėtų būti pagerintas sukūrus ir įdiegus vertinimo technikas remiantis siūlomu principu. Pavyzdžiui, pasirinktų veiksnių konvergencija matricos vidurio link atskleidžia pažangios patirties perdavimo prioritetus ir poreikius pasirinktuose sektoriuose bei inovacijų srityse.

Rezultatai apima ne tik atstovaujančio eksperto nuomonę, bet apima ir kitų ekspertų vertinimus. Rezultatai žaliojoje zonoje turėtų būti traktuojami kaip esminiai ir prioritetiniai patirčiai perduoti. Oranžinės zonos rezultatai nurodo antrinius patirties perdavimo procesus, o raudonojoje zonoje rodomi rezultatai neturi poreikio patirčiai perduoti Tokiomis aplinkybėmis, kai veiksniai aptinkami raudonojoje zonoje, ir jei patirtį perduoti reikia Europos Sąjungos šalims kandidatėms ir galimoms kandidatėms, geroji inovacijų vadybos praktika turi būti perduota iš kitų Centrinės ir Rytų Europos šalių, kur vertinimas yra geresnis. Be to, siūloma matrica pristato tikslią Baltijos šalių patirtį kiekviename socialinio ir ekonominio gyvenimo sektoriuje, siekiant ją suderinti su gerosios inovacijų vadybos praktikos perdavimo Europos Pietryčių šalims poreikiais.

Bendrosios išvados

1. Inovacijų plėtojimas kartu su socialiniais ir ekonominiais iššūkiais yra ypač svarbus ES šalims kandidatėms. Inovacijos padidina tarptautinį konkurencingumą ir skatina kiekvienos šalies darnų technologinį, politinį ir ekonominį augimą. Šiame kontekste turėtų būti nustatyti toliau pateikti modeliai, skirti Baltijos šalių pažangios patirties perkėlimui į ES šalis kandidates ir galimas kandidates pagrįsti:

   − Inovacijos yra siejamos su įmonių veikla ir pokyčiais, atsirandančiais dėl aukštųjų technologijų, technikos, procesų ir rinkų dviprasmybių.

   − Inovacijų vadybos patirties perkėlimas gali sumažinti inovacijų riziką ir pagerinti inovacijų rezultatus.

   − Didelių investicijų viešosioms inovacijos paramos sistemoms plėtoti poreikis bei žinių ir rizikos prognozavimo būtinybė suteikia prioritetą gerosios inovacijų vadybos praktikos perdavimui. Taigi tiksliniai sėkmingų inovacijų pasiekimai yra būtini.

2. Nepaisant to fakto, kad inovacijų subjektui buvo skirtas platus tiriamųjų ir teorinių studijų spektras, tolimesni gerosios inovacijų vadybos praktikos perdavimo tyrinėjimai ES plėtros sąlygomis yra reikalingi dėl efektyvumo stokos ir ribotų galimybių, siekiant įvertinti jų progresą. Dažniausiai inovatyvių veiklų iššūkiai sprendžiami remiantis neoklasikine ir evoliucine metodikomis. Tai apriboja gerosios inovacijų vadybos praktikos perdavimo svarbos supratimą bei poveikio inovatyvioms veikloms vertinimą. Taigi, siekiant padidinti inovacijų vadybos efektyvumą, yra svarbu vadovautis šiomis mokslinio tyrinėjimo sritimis: atlikti socialinių ir ekonomikos sektorių bei inovacijų rūšių kompleksinę analizę; sukurti ir pritaikyti praktikoje vertinimo metodus ir interpretuoti pažangios patirties perkėlimą.

3. Atsižvelgiant į Europos Sąjungos šalių kandidačių ir galimų kandidačių socialinių ir ekonominių sąlygų skirtumus ir gerosios inovacijų vadybos praktikos perdavimo poreikį, efektyvumo vertinimas turi būti grindžiamas inovacijų holistine paradigma. Remiantis tuo, gali būti nustatyti esminiai pažangios patirties perkėlimo vertinimo etapai: Baltijos šalių socialinės ir ekonominės plėtros vertinimas, Baltijos ir Centrinės ir Rytų Europos šalių inovacijų paramos sistemų vertinimas, ekonomikos ir socialinių sektorių inovatyvių veiklų pažangos patirties vertinimas; Europos Sąjungos šalių kandidačių ir galimų kandidačių socialinės ir ekonominės plėtros vertinimas, Europos Sąjungos šalių kandidačių ir galimų kandidačių inovacijų paramos sistemų vertinimas, Europos Sąjungos šalių kandidačių ir galimų kandidačių inovacijų vadybos patirties ir ekonomikos bei socialinių sektorių veiklų vertinimas; inovatyvių veiklų plėtotės krypčių vertinimas.

4. Siūlomas modelis gali būti taikomas skirtinguose inovacijų politikos plėtojimo ir įgyvendinimo etapuose ir leidžia įveikti inovacijų vadybos kliūtis. Siūlomas vertinimo modelis pasižymi šiais privalumais:

- Pagrindžia gerosios inovacijų vadybos praktikos perdavimo atitiktį inovacijų iššūkiams ir socialinės bei ekonominės integracijos problemoms.

- Sudaro galimybes perduoti Baltijos šalių inovacijų vadybos pažangią patirtį Europos Pietryčių regionui, nagrinėjant inovacijų poreikį šalyse kandidatėse pagal kiekybinius parametrus. Remiantis siūlomais vertinimo principais nustatyti veiksniai, skirti socialiniam ir ekonominiam vertinimui, ir inovatyvios veiklos rezultatų vertinimo kriterijai bei išreikšta kompleksinio poveikio tikimybė. Be to, taikant siūlomą modelį svarbiausi socialiniai ir ekonominiai veiksniai vertinami taikant daugiakriterį metodą, o socialinės ir ekonominės plėtros bei inovatyvių veiklų rezultatų sąryšis nustatomas koreliacinės analizės metodu.

- Baltijos šalių gerosios inovacijų vadybos pažangi patirtis ir inovacijų poreikis kiekviename Pietryčių Europos socialiniame ir ekonomikos sektoriuje atskleidžiama taikant daugiakriterio vertinimo SAW metodą.

- Siūlomas modelis gali būti taikomas nustatant pagrindinius socialinius ir ekonominius veiksnius (pvz., jei nagrinėjamo socialinio ir ekonominio veiksnio T arba $R < 10$, tada veiksnys turi būti plėtojamas), taip pat nustatant inovacijų rūšis, siejamas su socialiniais ir ekonomikos sektoriais, siekiant įvertinti Baltijos šalių inovacijų pažangią patirtį ir inovacijų poreikį Europos Pietryčių regione (pvz., jei nagrinėjamo veiksnio $\varphi < 10$, tada inovatyvios veiklos turi būti priskirtos prie pasirinktinų sektorių).

5. Empiriniai tyrimai, kuriuos atliekant buvo pritaikytas siūlomas modelis, nustatė svarbius gerosios inovacijų vadybos praktikos perdavimo atvejus:

- Gerosios inovacijų vadybos praktikos perdavimo poveikis matomas ilguoju laikotarpiu (maždaug po ketverių metų).

- Siekiant plėtoti inovacijų politiką svarbu susikoncentruoti į Europos Sąjungos šalių narių pažangios patirties efektyvumą, ir modelis nurodys galimybę atskirti esminius ekonomikos sektoriaus socialinius ir ekonomikos veikslius, kuriuos būtina pagerinti.

6. Siūlomas modelis gali būti taikomas siekiant plėtoti Pietryčių Europos šalių integracijos procesus abiem – nacionaliniu ir ES lygmenimis – atsižvelgiant į perkėlimo procesus, grindžiamus Baltijos šalių inovacijų vadybos pažangios patirties įgyvendinimu. Modelį pritaikti yra naudinga, nes tai padidina inovacijų vadybos efektyvumą, ilguoju laikotarpiu pagerina šalies konkurencingumą ir nustato tiesioginį bei netiesioginį gerosios praktikos perdavimo poveikį inovacijų vadybos politikos kūrėjams.

Annexes[2]

Annex A. Innovation Infrastructure of the Republic of Lithuania and the Republic of Albania

Annex B. Social and Economic Development Statistics and Innovaion Performance Ratio in Central-East Europe and South-East Europe

Annex C. Author`s Declaration of Academic Integrity

Annex D. Copies of Scientific Publications by the Author on the Topic of the Dissertation

---

[2]The annexes are supplied in the enclosed compact disc

Bahman PEYRAVI

MODELLING OF INTERNATIONAL TRANSFER
OF GOOD PRACTICES OF INNOVATION MANAGEMENT
UNDER CONDITIONS OF EUROPEAN INTEGRATION

Doctoral Dissertation

Social Sciences,
Management (03S)

TARPTAUTINIO GEROSIOS INOVACIJŲ VADYBOS
PRAKTIKOS PERDAVIMO EUROPOS INTEGRACIJOS
SĄLYGOMIS MODELIAVIMAS

Daktaro disertacija

Socialiniai mokslai,
vadyba (03S)