

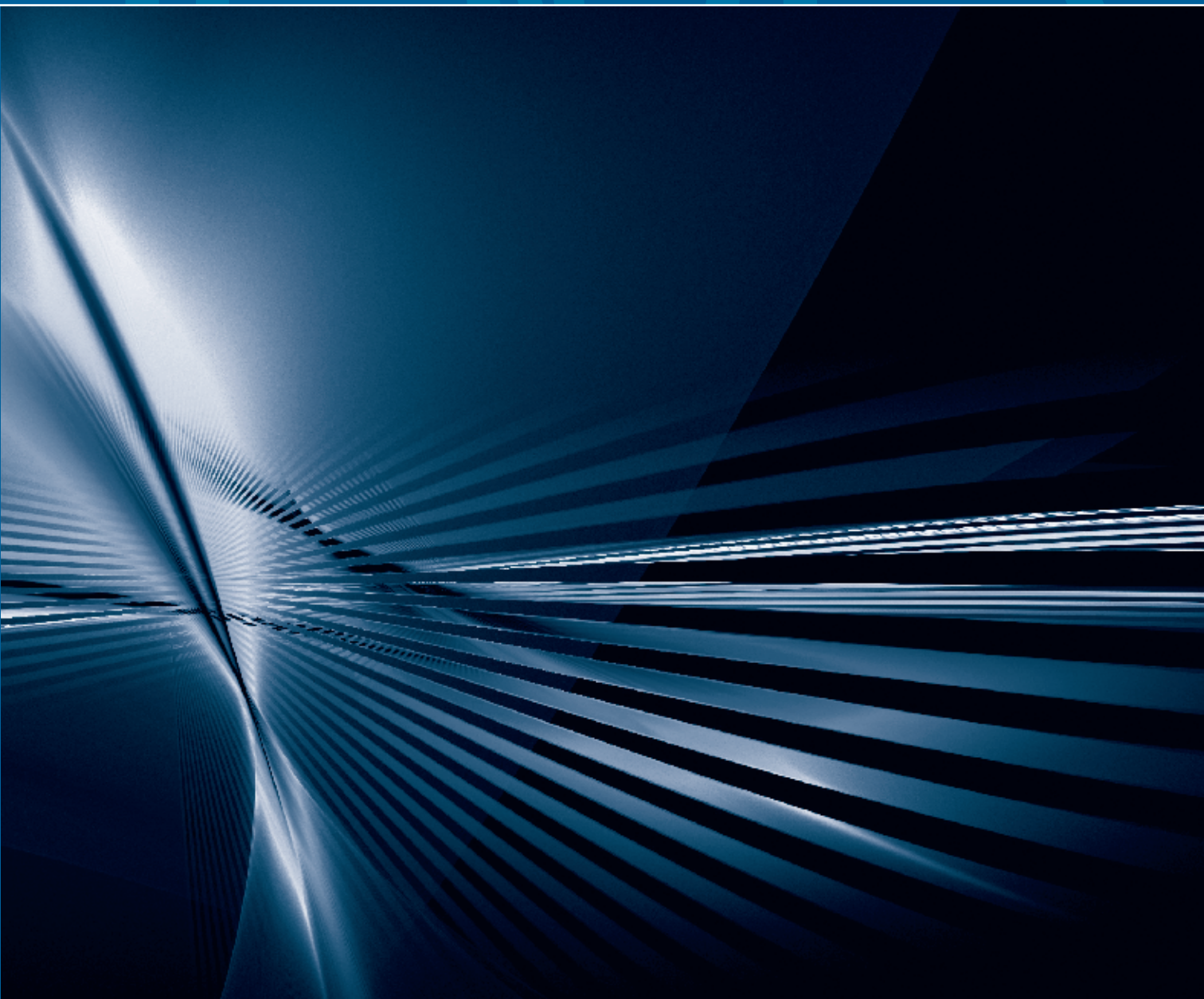
ORGANIZACIJA

Journal of Management, Informatics and Human Resources

Volume 51, Number 1, February 2018

ISSN 1318-5454

Poštnina plačana pri pošti 4102 Kranj



Revija za management, informatiko in kadre

ORGANIZACIJA

Organizacija is an interdisciplinary peer reviewed journal that seeks both theoretically and practically oriented research papers from the area of organizational science, business information systems and human resources management. Topics will be drawn from, but are not limited to, the following areas:

- organizational theory, development and restructuring of organizations;
- new and innovative organizational structures and approaches;
- managerial aspects of quality management;
- organizational behavior;
- human resources management;
- development, restructuring and management of information systems;
- interorganizational systems, electronic commerce;
- decision making, decision support.

In particular, we seek papers which cover state-of-art developments in organizational theory and practice, and present new insights that improve our understanding in the subject area of the journal

Organizacija je interdisciplinarna znanstvena revija, ki objavlja prispevke s področja organizacije, informatike in kadrovskega managementa. Primeri tematskih sklopov, ki jih pokriva revija, so:

- teoretične osnove organizacijskega razvoja ter spreminjanja organizacijskih struktur in procesov
- novi organizacijski pristopi ter njihova uporaba
- organizacijski ukrepi za doseganje večje produktivnosti, ekonomičnosti in rentabilnosti poslovanja in proizvodnje
- management kakovosti
- kadrovanje in izobraževanje kadrov pri prestrukturiranju podjetij
- stimulativnost nagrajevanja v spremenjenih lastninskih razmerah
- prestrukturiranje organizacijskih in informacijskih sistemov
- načrtovanje, razvoj in uporaba informacijske tehnologije in informacijskih sistemov
- medorganizacijski sistemi, elektronsko poslovanje
- odločanje, podpora odločanju, direktorski informacijski sistemi

Vsebina ni omejena na navedene tematske sklope. Še posebej želimo objavljati prispevke, ki obravnavajo nove in aktualne teme in dosežke razvoja na predmetnem področju revije, ter njihovo uvajanje in uporabo v organizacijski praksi.

Contents 1/2018

EDITORIAL	3	Włodzimierz SROKA, Joanna KUROWSKA-PYSZ, Štefan HITTMÁR	
RESEARCH PAPERS	4	Jarmila ZIMMERMANNOVÁ, Adam PAWLICZEK, Petr ČERMÁK	Public Support of Solar Electricity and its Impact on Households - Prosumers
	20	Brigita GAJŠEK, Jure KOVAČ, Benjamin T. HAZEN	An Organizational Framework for Logistic Platform and its Subtypes in a Search for More Logistically Attractive Regions
	36	Liliya SATALKINA, Nestor SHPAK	Evaluation of the Influence of the Macro-environment on the Social Innovation Activity of Enterprises
	50	Maja DIMIĆ, Lidija BARJAKTAROVIĆ, Olja ARSENIJEVIĆ, Polona ŠPRAJC, Janez ŽIROVNIK	Measuring the Concentration of Insurance sector – the Case of Southeastern European Countries
	66	Valentina BURKSIENE, Jaroslav DVORAK, Gabriele BURBULYTE- TSISKARISHVILI	Sustainability and Sustainability Marketing in Competing for the Title of European Capital of Culture

Editorial office: University of Maribor, Faculty of Organizational Science, Založba Moderna Organizacija, Kidriceva 55a, 4000 Kranj, Slovenia, Telephone: +386-4-2374295, E-mail: organizacija@fov.uni-mb.si, URL: <http://organizacija.fov.uni-mb.si>. Organizacija is co-sponsored by the Slovenian Research Agency.

Published quarterly. Full text of articles are available at <http://www.degruyter.com/view/j/orga> and <http://organizacija.fov.uni-mb.si>.

Papers for publication in Organizacija can be submitted via journal website at <http://organizacija.fov.uni-mb.si>. Before submission authors should consult. Guidelines available at <http://www.degruyter.com/view/j/orga>. You can contact the editorial via e-mail: organizacija@fov.uni-mb.si or joze.zupancic@fov.uni-mb.si.

Articles are currently abstracted/indexed in: Cabell's Directory, CEJSH (The Central European Journal of Social Sciences and Humanities), Celdes, CNPIEC, Die Elektronische Zeitschriftenbibliothek, DOAJ, EBSCO - TOC Premier, EBSCO Discovery Service, ECONIS, Ergonomics Abstracts, ERIH PLUS, Google Scholar, Inspec, International Abstracts in Operations Research, J-Gate, Microsoft Academic Search, Naviga (Softweco), Primo Central (ExLibris), ProQuest - Advanced Pol mers Abstracts, ProQuest - Aluminium Industry Abstracts, ProQuest - Ceramic Abstracts/World Ceramics Abstracts, ProQuest - Composites Industry Abstracts, ProQuest - Computer and Information Systems Abstracts, ProQuest - Corrosion Abstracts, ProQuest - Electronics and Co mmunications Abstracts, ProQuest - Engineered Materials Abstracts, ProQuest - Mechanical & Transportation Engineering Abstracts, ProQuest - METADEX (Me tals Abstracts), ProQuest - Sociological Abstracts, ProQuest - Solid State and Superconductivity Abstracts, Research Papers in Economics (RePEc), SCOPUS, Summon (Serials Solutions/ProQuest), TDOne (TDNet), TEMA Technik und Management, WorldCat (OCLC)

EDITOR / UREDNIK

Jože Zupančič
University of Maribor, Faculty of
Organizational Sciences, Slovenia

CO-EDITORS / SOUREDNIKI

Petr Doucek
Prague University of Economics,
Faculty of Informatics and Statistics,
Czech Republic

Sasha M. Dekleva
DePaul University, School of
Accountancy and MIS, Chichago,
USA

Matjaž Maletič
University of Maribor, Faculty of
Organizational Sciences, Slovenia

**GUEST EDITOR /
GOSTUJOČI UREDNIKI**

Włodzimierz Sroka
University of Dąbrowa Górnicza, Poland

Joanna Kurowska-Pysz
University of Dąbrowa Górnicza, Poland

Štefan Hittmár
University of Žilina, Slovakia

**EDITORIAL BOARD /
UREDNIŠKI ODBOR REVIJE**

Hossein Arsham,
University of Baltimore, USA

Franc Čuš,
University of Maribor, Slovenia

Vlado Dimovski,
University of Ljubljana, Slovenia

Daniel C. Ganster,
Colorado State University, USA

Jože Gričar,
University of Maribor, Slovenia

Werner Jammerneegg,
Viena University of Economics and
Business Administration, Austria

Marius Alexander Janson,
University of Missouri-St. Louis,
USA

Stefan Klein,
University of Münster, Germany

Aleksandar Marković,
University of Belgrade, Serbia

Hermann Maurer,
Technical University Graz, Austria

Matjaž Mulej,
University of Maribor, Slovenia

Valentinas Navickas,
Kaunas University of Technology,
Lithuania

Ota Novotny,
University of Economics, Prague,
Czech Republic

Milan Pagon,
Independent University, Bangladesh
(IUB), Dhaka, Bangladesh

Björn Paape,
RWTH-Technical University Aachen,
Germany

Dušan Petrač,
NASA, Jet Propulsion Laboratory,
California Institute of Technology,
USA

Hans Puxbaum,
Vienna University of Technology,
Austria

Vladislav Rajkovič,
University of Maribor, Slovenia

Gábor Rekettye,
University of Pécs, Hungary

Henk G. Sol,
Faculty of Economics and Business,
University of Groningen, Netherlands

Eugene Semenkina, Siberian State
Aerospace University, Krasnoyarsk,
Russian Federation

Velimir Sreća,
University of Zagreb, Croatia

Włodzimierz Sroka
University of Dąbrowa Górnicza,
Poland

Paula Swatman,
University of Tasmania, Australia

Brian Timney,
The University of Western Ontario,
Canada

Maurice Yolles,
Liverpool John Moores University,
UK

Douglas R. Vogel,
Harbin Institute of Technology-HIT,
School of Management, China

Gerhard Wilhelm Weber,
Middle East Technical University,
Turkey

Stanisław Wrycza,
University of Gdańsk, Poland

Yvonne Ziegler,
Frankfurt University of Applied
Sciences, Germany

Hans-Dieter Zimmermann,
FSH St. Gallen University of Applied
Sciences, Switzerland

DOI: 10.2478/orga-2018-0006

Editorial

It is our great pleasure to launch the latest issue of our journal “Organizacija”. Over several years, “Organizacija” has earned its position among the best scientific journals, as confirmed, *inter alia* by the fact that the journal is indexed in numerous databases, including renowned ones such as SCOPUS. Such success belongs to all of us: the members of the Editorial Team, Editorial Board, reviewers and authors, without whom the high status of the journal and its recognition throughout the scientific world would not be possible.

The “Organizacija” journal publishes papers from topics pertaining to broadly understood management and economics. You will find five selected papers from these areas in the current issue as well.

The basis for deliberations presented in the first paper entitled “*Public Support of Solar Electricity and its Impact on Households - Prosumers*” are the claims of the authors that energy efficiency and renewable energies have a great potential for economic development in Europe’s regions. Given this fact the authors present new agent model of household - prosumer and to compare two scenarios – “off grid household” and “on grid household”. The model is structured as a micro-level agent model, representing one household – prosumer.

The authors of the second paper – “*An Organizational Framework for Logistic Platform and its Subtypes in a Search for More Logistically Attractive Regions*” claim that regional sustainable economic growth on logistics bases requires the coordinated development of infrastructure, information and communications technology, and proactive education of logistics specialists. The goal is reachable with regional logistics platforms (RLPs). This current research develops a theoretical model for RLPs, consisting of (1) basic constituents, (2) an implementation area, and (3) stakeholders’ and operational benefits.

In turn, the third paper entitled “*Evaluation of the Influence of the Macro-environment on the Social Innovation Activity of Enterprises*” presents a toolkit for the evalua-

tion of the influence of the macro-environment on the social innovation activity (SIA) of enterprises. The authors claim that nowadays the emphasis on social components in the general mainstream of innovation activity is one of the strongest grounds for the successful functioning and development of enterprises. In several countries, social innovation activity is becoming a product of business in general, with associated expectations regarding profit.

The most significant contribution of the fourth paper entitled “*Measuring the Concentration of Insurance sector – the Case of Southeastern European Countries*” is that it determines the level of concentration in the insurance sector in the eight selected countries of South and Eastern Europe. Empirical research of concentration level in the insurance market is based on appropriate criteria of the development in the insurance sectors: total earned premiums, total earned non-life premiums and total earned life premiums.

And finally, the last paper entitled “*Sustainability and Sustainability Marketing in Competing for the Title of European Capital of Culture*” deals with the dimension of sustainability in the context of competing for the title of the European Capital of Culture (ECOC). Based on the comparative analysis of the applications of the respective cities, the authors claim that the proper integration of cultural policy into the social system impacts and changes cultural values and beliefs, shifting them towards sustainable behaviour and sustainability.

We believe that the articles will be interesting for scholars, policy-makers and practitioners. We also hope that a combination of theory and practice, together with the nature of the texts presented herein, allow us to meet the readers’ expectations.

Guest Editors

Włodzimierz SROKA, Joanna KUROWSKA-PYSZ,
University of Dąbrowa Górnicza, Poland,
Štefan HITTMÁR, University of Žilina, Slovakia

DOI: 10.2478/orga-2018-0001

Public Support of Solar Electricity and its Impact on Households - Prosumers

Jarmila ZIMMERMANNOVÁ, Adam PAWLICZEK, Petr ČERMÁK

Moravian University College Olomouc, tr. Kosmonautu 1288/1, 77900 Olomouc, Czech Republic
jarmila.zimmermannova@mvso.cz, adam.pawliczek@mvso.cz, petr.cermak@mvso.cz

Background and Purpose: Currently, the idea of households - prosumers is broadly discussed in public governments, mainly in connection with both the energy security issues and the environmental issues. Therefore, the main goal of this paper is to present new agent model of household - prosumer and to compare two scenarios – “off grid household” and “on grid household”. The additional goal is to evaluate the impact of public support of solar electricity on the economic efficiency of household – prosumer projects (systems).

Design/Methodology/Approach: The model is structured as a micro-level agent model, representing one household – prosumer. The model has the following general characteristics: one household with own electricity generation (photovoltaic panels), battery and in case of “on grid household” also connection to the grid. The main goal of the agent is to cover electricity consumption in household with minimal costs. The agent model of prosumer is tested and validated, using the empirical data.

Results: The highest level of subsidy has significant impact on the economic indicators of selected scenarios. It causes lower investment costs at the beginning of the project and consequently shorter payback period (3-4 years earlier), positive cumulative cash flow, net present value and IRR in earlier period (approximately 5-10 years earlier, depending on the scenario).

Conclusion: We can recommend to the government to continue with current system of subsidies, since it contributes to better economic indicators of particular solar electricity projects. On the other hand, the level of subsidy should be at least the same as in current year 2017, for the purposes of representing the significant part of the investment costs. Low level of subsidy has negligible impact on the economic indicators of households – prosumers projects. The developed agent model is suitable for the evaluation of economic impact of public support on households – prosumers.

Keywords: *renewable electricity; photovoltaics; prosumers; households; public support; agent model; energy model*

1 Introduction

1.1 Policy introduction

Energy efficiency and renewable energies have a great potential for economic development in Europe's regions by boosting energy security, creating jobs and increasing regional autonomy, as well as helping to fight climate change (Hunkin et al., 2014). The European Union has contributed greatly to the growth of these sectors in Europe, with the

Europe 20/20/20 targets setting the mid-term policy framework, and a variety of programmes and tools providing finance and support for regional development.

Based on Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009¹ on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC² and 2003/30/EC³, the European Union as a whole has in 2020 target of a 20% share of energy from renewable sources and a 10% share of energy from renewable sources in transport. The countries and regions of central Europe

Received: July 5, 2017; revised: December 17, 2017; accepted: December 29, 2017

1 <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0028>

2 <http://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32001L0077>

3 <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32003L0030&qid=1498475908984>

vary greatly in their policy frameworks and have a wide disparity in their current performance and 2020 targets, regarding electricity generation, almost all countries are on track for meeting their commitments (Hunkin et al., 2014). For the Czech Republic, the European Commission set a minimum 13% share of energy from renewable energy sources in gross final energy consumption. Achieving this goal must be also provided with at least a 10% share of renewables in transport.

Based on statistics of Ministry of Industry and Trade of the Czech Republic (MIT, 2017), the yield of gross production of electricity from renewable sources in 2015 on the total gross electricity generation was 11,23%, the share of renewable energies on primary energy sources was 10,5% and the share of renewable energy on final energy consumption, in accordance with international methodology of calculation EUROSTAT SHARES, was 15,7%.

Regarding public support instruments, government of the Czech Republic introduced more institutions for support of renewable energy sources. In the field of legislation⁴, the basic law is Act no. 165/2012 Coll., on promoted energy sources and on amendment to some laws and Act no. 458/2000 Coll., on business conditions and public administration in the energy sectors and on amendment to other laws (the “Energy Act”). The law is supplemented by conceptual documents – State energy policy of the Czech Republic (December 2014), National Renewable Energy Action Plan of the Czech Republic (2015) and National Action Plan for Smart Grids (2015). In connection with this law and conceptual documents, there are the following economic instruments supporting renewable electricity generation: grants on investments, feed-in tariffs, green-premiums on electricity prices, tax exemptions, tax reductions and refund of taxes. A feed-in tariff (FIT) is generally a policy mechanism designed to accelerate investment in renewable energy technologies. It achieves this by offering long-term contracts to renewable energy producers, typically based on the cost of generation of each technology. The main goal of feed-in tariffs is to offer cost-based compensation to renewable energy producers, providing price certainty and long-term contracts that help finance renewable energy investments. Under the above law, Energy Regulatory Office sets out the scope and level of support in its price decisions.

It is also valuable to focus in more detail on National Action Plan for Smart Grids (NAP SG)⁵. Smart grids (SG) are defined as the electric networks that are able to effectively link the behaviour and actions of all users connected to them - producers, consumers, prosumers (consumers with their own production) - to ensure the economically efficient, sustainable energy systems operating with low losses and high reliability of supply and safety (MIT,

2015). Regarding the schedule of NAP SG implementation in the Czech Republic, the period up to 2019 can be characterized as a period of preparation, the next period 2020-2029 represents the gradual implementation of SG, and the period 2030 – 2040 should represent maximum economic efficiency at the required level of “intelligence” of the SG in accordance with the needs of the energy system and the existing technological level at that time (MIT, 2015).

As is mentioned in NAP SG, in connection with the development of renewable energy sources, the anticipated development of small sources, including combined heat and power production, the development of storage capacities and electro-mobility, increases demand on control systems, protection systems, measuring equipment, automation equipment and other elements of the power system.

An integral part of considerations on the integration of intelligent elements into electricity system of the Czech Republic is to ensure cyber security, privacy and information support provided to the client for his decision (MIT, 2015).

Therefore the importance and necessity of economic models in this area is increasing, especially in case of models representing the suitable tool for decision making. The real behaviour and decision making of particular economic entities can be different in situation with or without interactions with other entities – in other words the rules within a group of economic entities can be different than individual entity rules. The approach, which includes also interaction rules, is called ABM - agent based modelling.

The modelling based on the agent based modelling or complex multi-agent modelling has been historically used mainly in the field of engineering and information sciences; however, the importance of this kind of models has been rapidly increasing in the economic sciences and management, mainly in the area of financial markets management, corporate management, water management, waste management, land management, transportation and energy sources management. Applying agent based modelling, the researcher explicitly describes the decision making processes of particular actors at micro level. The structure emerges at the macro level as a result of the actions of the agents and their interactions with each other (Janssen and Ostrom, 2006).

1.2 Literature overview

We can find mainly studies analysing and evaluating public policies and public support of renewable energy sources and their success in European countries as a whole (Albrecht et al., 2015; Marques and Fuinhas, 2012) or selected USA countries (Bedsworth and Hanak, 2013); however most of the studies are represented by national case stud-

⁴ <https://www.mpo.cz/en/energy/energy-legislation/>

⁵ <https://www.mpo.cz/dokument158711.html>

ies evaluating domestic economic instruments and state public policies supporting renewable energy sources, for example in Romania (Zamfir et al., 2016), Lithuania (Bobinaite and Tarvydas, 2014) or Spain (Ortega et al., 2013).

Regarding agent models, we can find for example agent-based model with multi-level herding for complex financial systems (Chen et al., 2015), consentaneous agent-based and stochastic model of financial markets (Gontis and Kononovicius, 2014), agent-based double auction markets (Cai et al., 2014) and synthesis of agent-based financial markets and New Keynesian macroeconomics (Lengnick and Wohltmann, 2013). In the field of management, there should be mentioned mainly multi-agent systems for the simulation of land-use and land-cover change (Parker et al., 2003), ecosystem management (Bousquet and Le Page, 2004), urban traffic management and planning (Fiosins et al., 2011) or energy management (Lagorse et al., 2010). There are also studies focused on multi-agent models connected with climate change or carbon emissions reduction, for example the study focused on estimating the impacts of climate change policy on land use (Morgan and Daigneault, 2015) and carbon emissions trading scheme exploration in China (Tang et al., 2015).

Dealing with scientific studies focused on prosumer issues, there are only few studies in this field, since it represents new scientific topic. For example Flaute et al. (2017) investigated the macroeconomic effects of the evolution of prosumer households in the future energy market in Germany, Olkkonen et al. (2017) examined micro-producers of energy as energy “prosumers”—hybrid producers and consumers—and as a challenge to the current logic of energy companies’ stakeholder relations in Finland, Zajackowska (2016) focused on the current state of the Polish energy sector related to the prosumer energy industry and described the future potential for the development of prosumer energy in Poland. Bellekom et al. (2016) explored the emerging rise of prosumers of electricity and its implications, in particular for grid management and electricity supply in the Netherlands.

In the Czech Republic, we can find mainly economic analyses of renewable energy sources implementation and its economic aspects, for example Ryvolová and Zemlinová (2010) analysed costs connected with the growth of wind energy supply, Pawliczek (2011) described photovoltaic sector and its development. Průša et al. (2013) analysed consumer loss in photovoltaic power plants in the period 2010–2011 and Janda et al. (2014) focused on the total historical and future costs of supporting photovoltaic electricity generation in the Czech Republic. The model estimation of such costs is accompanied by a methodologically unified comparison with the costs of supporting other renewable energy resources. Zimmermannová and Jílková (2016) analysed the relationship between the increase of renewable electricity generation and the progress of public support for renewable electricity.

Analysis of current scientific studies focusing on prosumer issues, using agent-based models, reveals that there is a lack of models dealing simultaneously with economic and environmental issues, mainly in the area of sustainable energy development and reduction of greenhouse gas emissions. Moreover, a dynamic model is needed, since the economic entities have the ability to learn and optimize their behaviour continuously, depending on both external and internal changes in their environment. However, there is also a question of uncertainty, unexpected changes and disturbances in the economic system; therefore we need also methods based on language rules.

Therefore, the general goal of our research is to create an agent model of prosumer. We build on our experiences with the proposal of multi-agent simulation model application in the emission allowances trading area (Zimmermannová and Čermák, 2014) and with creation of a pilot model of a single agent – the broker simulation model in the emission allowances trading area, based on fuzzy logic and language rules (Čermák et al., 2015).

The main goal of this paper is to present new agent model of prosumer and to compare two scenarios – “off grid household” and “on grid household”. The additional goal is to evaluate the impact of public support of solar electricity on the economic efficiency of prosumer household projects (systems).

For the purposes of fulfilling all goals of the paper, the following tasks are defined:

1. Firstly, the general structure of the agent model of prosumer will be developed;
2. Secondly, the suitable empirical data will be collected;
3. Two scenarios will be developed – off grid household and on grid household;
4. The agent model of prosumer will be tested and validated, using the empirical data;
5. Then, both scenarios will be compared, focusing on the economic efficiency of particular project;
6. Finally, the evaluation of the impact of public support of solar electricity on the economic efficiency of prosumer household projects (systems) will be provided.

2 Methods and Data

2.1 Methods

We are going to develop micro-level agent model, representing one household – prosumer. The model has the following characteristics:

- one household with own electricity generation (photovoltaic panels), battery and gasoline unit or distributional network;
- the main goal of this agent will be to cover electricity consumption in household with minimal costs;

- the primary energy source is a 10 kWp (kilowatt peak) photovoltaic power plant supplemented by a 15 kWp gasoline unit as an alternative energy source;
- the duration of the project is 30 years;
- the prerequisite for the calculation is knowledge of the energy profile of production and consumption of the system (according to the real natural conditions);
- the model works with the average daily values of the household energy profile;
- the key input parameters are the investment costs, precisely costs connected with the purchase of photovoltaic panels, alternative energy source - gasoline unit and battery.

For the purposes of creating of agent model of household - prosumer, we need to use different methods, including statistical methods, econometric methods and nonconventional methods using fuzzy logic.

Figure 1 shows the scheme of the agent model development.

The general model is defined by the parameters, described in the following text.

The inputs to the model are represented by all revenues and expenditures related to the preparation, deployment and operation of photovoltaic power plant, including AMM (Advanced Meter Management) and parameters quantifying elements, activities, entities, or describing boundary conditions of the model's operation.

Input data used for the development of general agent model of prosumer are the following:

- Fixed costs: investment costs (depreciation), overhead (taxes, fees);
- Variable costs: direct operating costs, operating overheads;
- Revenue: produced kWh of electricity and electricity price;

- Subsidies: Subsidy "New Green Savings" 150.000,- CZK (approx. 5868 EUR⁶);
- Discount Rate: official discount rate of Czech National Bank, including prediction;
- Alternative fuel prices (N95): empirical data from the period 1995 – 2016, including prediction;

Output data of the general agent model of prosumer (for the purposes of this paper) are the following:

- Revenue: savings connected with own electricity production;
- Cash flow, discounted cash flow, cumulative cash flow;
- Payback period;
- Net present value (NPV);
- Internal rate of return (IRR).

Payback period is an investment evaluation method that tracks the moment (expressed in years) when the funds (capital expenditures) are returned to the investment expended. For the purposes of calculation of the payback period we can use **Cumulative Cash Flow (CCF)**: where N represents the total number of years of operation

$$CCF = \sum_{n=0}^N R_n$$

of the investment, n are the current years of operation of the investment, R_n is the net cash flow in each year of the investment's operation. At the moment, when the cumulative cash flow (CCF) is positive, this year n represents a payback period. CCF can be discounted.

Net Present Value (NPV) - quantifies the current value of all cash flows over the life of the investment at the specific interest rate or required rate of return. The general formula for the NPV calculation is the following:

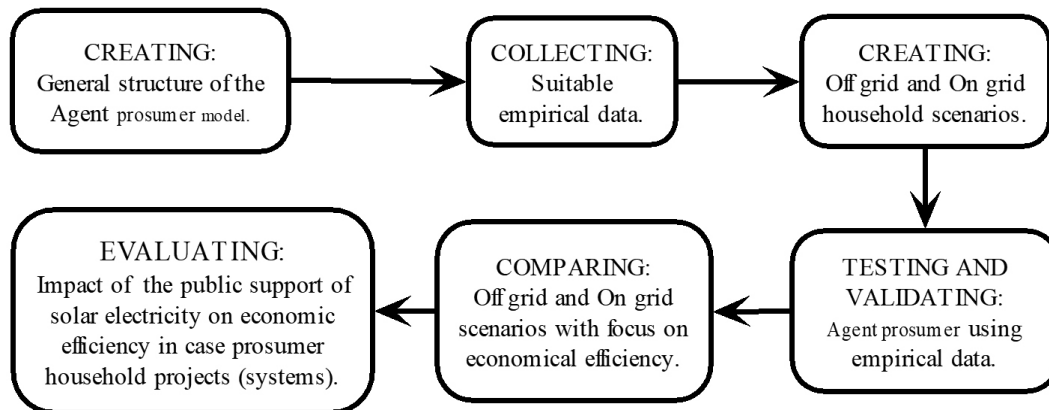


Figure 1: The scheme of the agent model development. Source: authors

⁶ 1 EUR = 25.56225 CZK (Exchange Rate 10.12.2017)

$$NPV = \sum_{n=0}^N \frac{R_n}{(1+i)^n}$$

where i is the required return/interest (discount) rate.

Internal Rate of Return (IRR) is a similar approach to investment evaluation that applies the net present value. However, the IRR seeks to answer the question: “At what interest rate (required profitability) will the net present value be zero?” IRR also represents a dynamic method and it is given by the following equation:

$$NPV = \sum_{n=0}^N \frac{R_n}{(1+IRR)^n} = 0$$

where the symbols correspond to NPV. The higher IRR of a particular investment or project represents the better solution.

2.2 Data

We have original dataset of daily production of electricity from photovoltaic power plant, installed in VSB-TU Ostrava, Faculty of Electrical Engineering and Computer Science; simultaneously we have also original dataset of daily electricity consumption in typical household, mod-

elled also in VSB-TU Ostrava⁷. Both original datasets are available for the authors within the project TH01020426 “System for active management of decentralized energy units on local level”, financed by the Technology Agency of the Czech Republic. The main goal of the project is to develop, verify and assess a system for active management of energy production, distribution and consumption of an energy unit on local level. The energy unit is a platform with a power output corresponding to a house or office building, which is capable to operate safely and reliably in island mode thus independently on energy supplies from external energy system, and is using mainly local renewable energy sources. The developed system will be highly scalable, ensuring its applicability not only for abovementioned consumers but also for micro-region level (distribution network). The outcomes of the project will be validated using simulation models and pilot-scale trials.

Figure 2 illustrates production and consumption of electric energy of the above mentioned photovoltaic system, including balance calculated as the difference between production and consumption, polynomial trends of 6th degree and 2 day floating average. Points of production and consumption represent average daily values.

Particular technology used in the model is the following: photovoltaic power plant (40 Winaico 250 W panels), inverters, controllers (Xantrex XW6000, MPPT Xantrex

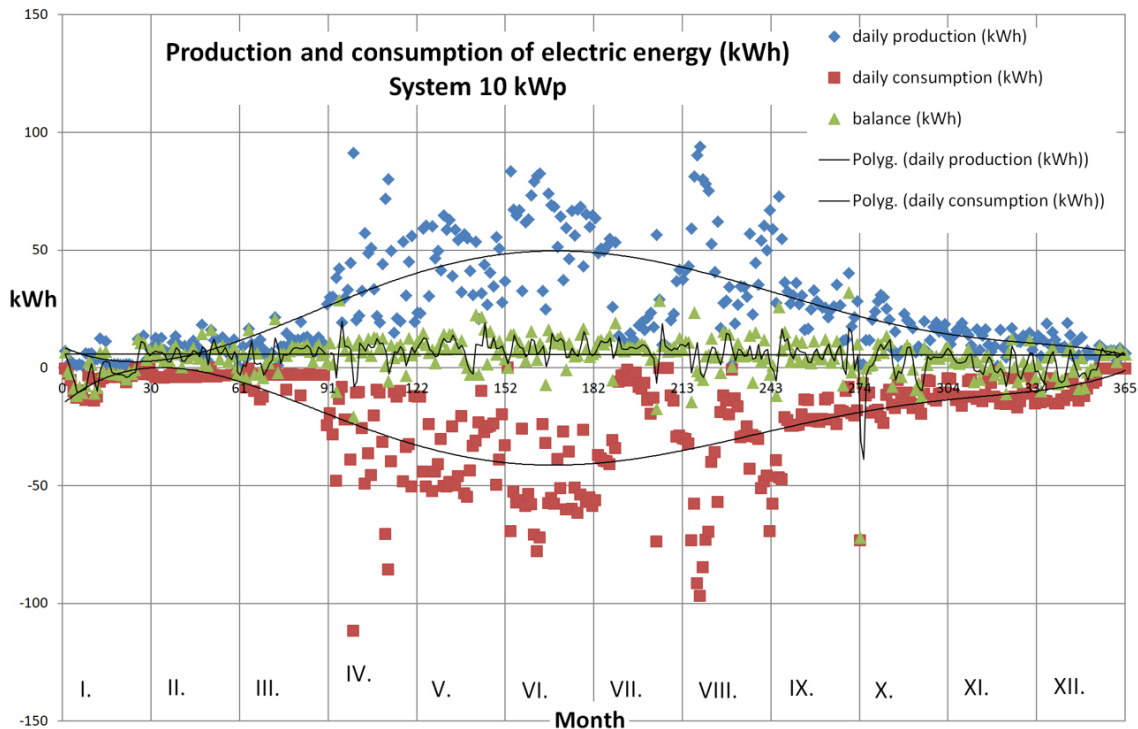


Figure 2: Production and consumption of electric energy – collected empirical data. Source: authors

⁷ Data are available upon request (corresponding author jarmila.zimmermannova@mvso.cz).

MPPT80/600), communication (Connect ComBox), accumulation (4 Accu LA3016, 48V, 30Ah, BMS), case (600x800x1200), wiring, fuse, 485/IP, DC/DC). Panel power installed: 10.000 Wp, power per panel: 250 Wp. Installation geographical locality: VSB-TU Ostrava-Poruba, Moravian-Silesian Region, Czech Republic.

The annual energy profile of our production and consumption system works with the following daily values:

- Daily electricity generation;
- Daily electricity consumption;
- Daily usable production (DUP) – production that can be consumed during the day by the household:
 - IF daily production > daily consumption THEN daily usable production = daily consumption;
 - IF daily production ≤ daily consumption THEN daily usable production = daily production;
- Daily production surplus (DPS) – daily production exceeding the daily consumption that can be sold to the grid:
 - IF daily production > daily consumption THEN daily production surplus = daily production - daily consumption;
 - IF daily production ≤ daily consumption THEN daily production surplus = 0;
- Daily electricity need for electricity from an alternative source (DEN):
 - IF daily production > daily consumption THEN daily electricity need = 0;
 - IF daily production ≤ daily consumption THEN daily electricity need = daily consumption – daily production.

Electricity prices for households in the model are represented by empirical data collected in the period 2000 – 2016, added by calculated trends 2017 - 2050 (CZK/kWh), excluding VAT.

Alternative energy source is represented by 15 kWp gasoline unit (HERON EGM 68 AVR-3E⁸). Gas prices are represented by empirical data from the period 1995 – 2016, added by calculated trends 2017 - 2050 (CZK / l), including VAT.

Discount rate (official discount rate of Czech National Bank) is represented by empirical data from the period 1990 – 2017, the annual average value.

For the purposes of feed-in tariff specification, we use data from Energy Regulatory Office (ERO)⁹, precisely feed-in tariffs for electricity generated from renewable energy sources in CZK per MWh in the period 2003 – 2017.

3 Scenarios, assumptions and agent model design

3.1 Scenarios

For the purposes of the main goals achievement, the following scenarios are defined:

A. Off grid household “ISLAND” – separate system with battery; the household is completely separate, not connected to the distribution network; the household uses photovoltaic panels as a source of electricity, the extra energy is stored in battery. In case of a lack of electricity, household takes electricity from alternative energy source - gasoline unit. The costs arise only on the household side, the AMM (Advanced Meter Management) system informs the household how much it has produced and how much electricity it has at a given time, including the prediction.

B. On grid household “PARTIAL ISLAND” - connected system with battery; the household is connected to the distribution network, firstly consumes electricity from own sources, then from the grid, production surpluses are supplied to the grid; the household uses photovoltaics as a source of energy, the extra energy is stored in batteries. In case of a lack of electricity, household takes electricity from the distribution network. Costs and revenues are generated on the household side and on the distribution side, the AMM (Advanced Meter Management) system informs the household how much it has produced and how much electricity is available at the given time and also ensures switching between the individual sources - solar panels, batteries and distribution network.

3.2 Assumptions

The following Table 1 describes detailed characteristics of the scenario “ISLAND”, which are additional to the general characteristics of the agent model of prosumer.

The detailed characteristics of the scenario “PARTIAL ISLAND” is similar like in the previous scenario “ISLAND”; however some characteristics are different – they are described in the following Table 2.

Focusing on public support impact issues, we calculate in our scenarios also with subsidy “New Green Savings”, regulated by the Ministry of the Environment of the Czech Republic. For the purposes of our research, we use the highest level of the subsidy - 150.000 CZK (approx. 5868 EUR) for one solar electricity project.

⁸ http://www.heron-motor.cz/media/attachments/catalog_product/22/8896120_1.pdf

⁹ <https://www.eru.cz/en/poze>

3.3 General model – agent prosumer

The following Figure 3 presents the structure of general agent model of prosumer.

Regarding the Figure 3, EC1 - ECn represent particular energy consumers (electrical equipment in household and the rules of electricity consumption for each of them), EG1 - EGm represent individual energy generators and the profile of their electricity generation, E-OPER1 – E-OPERk represent particular energy operators on the market, EC MIX represents energy consumption mix, precisely all rules based on definition of energy consumer devices switching profile (day of week, time), the other variables in the model are Environmental and natural conditions - Online – Sensors and Offline – external Database (Internet, Organization CHI Aladin...). In the middle of the mod-

el there we can find the decision-making unit – switcher, mixer which we can define better as E-broker.

For the purposes of the model development, the following steps are needed:

1. Energy production data collection and connected prediction based on environmental and natural conditions;
2. Energy consumption data collection and connected prediction based on consumption of household;
3. Optimization of energy consumption mix, including costs connected with energy consumption/production;
4. Optimization of selection of energy generator and/or energy operator; it depends on particular scenarios.

Table 1: Detailed characteristics of the scenario “ISLAND”. Source: authors

Cash OUT – investment costs	Converters, regulators, communications, control unit. Accumulation - battery lifetime = 15 years, expected price decrease for new battery = 25%. Power generator lifetime = 10 years, new power station is expected to be purchased at the discounted purchase price.
Cash OUT – operation costs	Maintenance - regular maintenance costs are assumed every 5 years. Wages and material - regular annual cleaning costs of panels. Energy (fuel) - regular annual fuel cost for alternative electricity source (N95). Direct (unit variable costs)
Cash IN	Revenue (savings from own electricity production).
Revenue (savings from production) in CZK	Total annual savings from own electricity production.
Saving from production PV annual empirical (kWh)	Annual sum (revenue).
Technical correction	Loss of efficiency about 1% per year.
Electricity price	Forecast of electricity price trend calculated by non-linear (exponential) model.
Discount Rate	Forecast of discount rate trend calculated by non-linear (exponential) model.

Table 2: Detailed characteristics of the scenario “PARTIAL ISLAND”. Source: authors

Cash OUT - investments	Power Generator costs = 0.
Cash OUT - operation	Energy - regular annual costs connected with electricity purchased from the grid.
Cash IN	Revenues (production savings) + revenues from sales of production surplus.
Production surplus (kWh)	Annual sum of daily surpluses.
Production surplus corrected (kWh)	Production surplus after correction of loss of efficiency about 1% per year.
Feed-in tariff – price for electricity supply (CZK/kWh)	Feed-in tariff with annual valorization of 2 %. Minimal feed-in tariff 3410 CZK/MWh (approx.133 EUR).
Revenues from sales of production surplus	Production surplus corrected * feed-in tariff

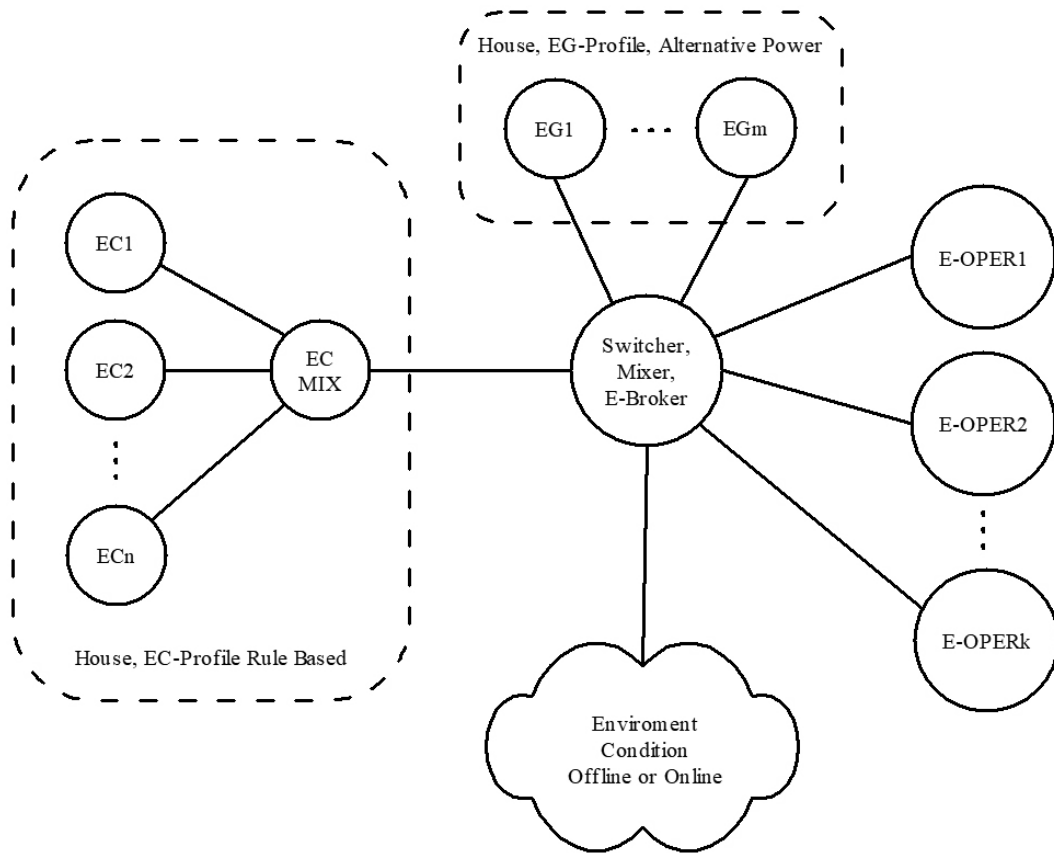


Figure 3: The structure of agent model of prosumer. Source: authors

Energy production and energy consumption data (step 1, step 2) were collected in VSB-TU Ostrava during the period 2015 – 2016, predictions were calculated using empirical data.

In the following part of this paper, we will focus in more detail on step 3 – optimization of energy consumption mix, partially also connected with step 4 – optimization selection of energy generator and/or energy operator.

4 Results

4.1 Economic aspects of scenarios “ISLAND” and “PARTIAL ISLAND”

Firstly, we should focus on the issue of optimization of energy consumption mix and the economic aspects of the scenario “ISLAND”.

Figure 4 shows us the economic aspects of the scenario “ISLAND”, precisely cash flow, cumulative cash flow, discounted cumulative cash flow and payback period.

Within this “ISLAND” scenario, cumulative cash flow indicator as well as discounted cumulative cash flow indi-

cator have increasing trend during the whole time of the solar electricity project (precisely 30 years), except the 15th year. In this year we can observe sharp decline, connected with the battery replacement, since the service lifetime of the battery is approximately 15 years. Therefore the household - prosumer should expect additional costs connected with new battery purchase and installation in 15th year of the project.

Regarding other useful economic indicator, payback period, Figure 4 shows us, that the project is not very effective. The payback period is represented by approximately 23 -24 years.

Secondly, we should focus on the optimization of energy consumption mix and the economic aspects of the scenario “PARTIAL ISLAND”.

In this scenario, consumption of electricity in our household is primarily covered by photovoltaic production and battery accumulation, the household - prosumer can also purchase electricity from grid. However, eventual surpluses of electricity can be also sold to the grid, potential revenues depend on current market price or minimal feed-in tariff (it is the case of our scenario).

Figure 5 shows the economic aspects of the scenar-

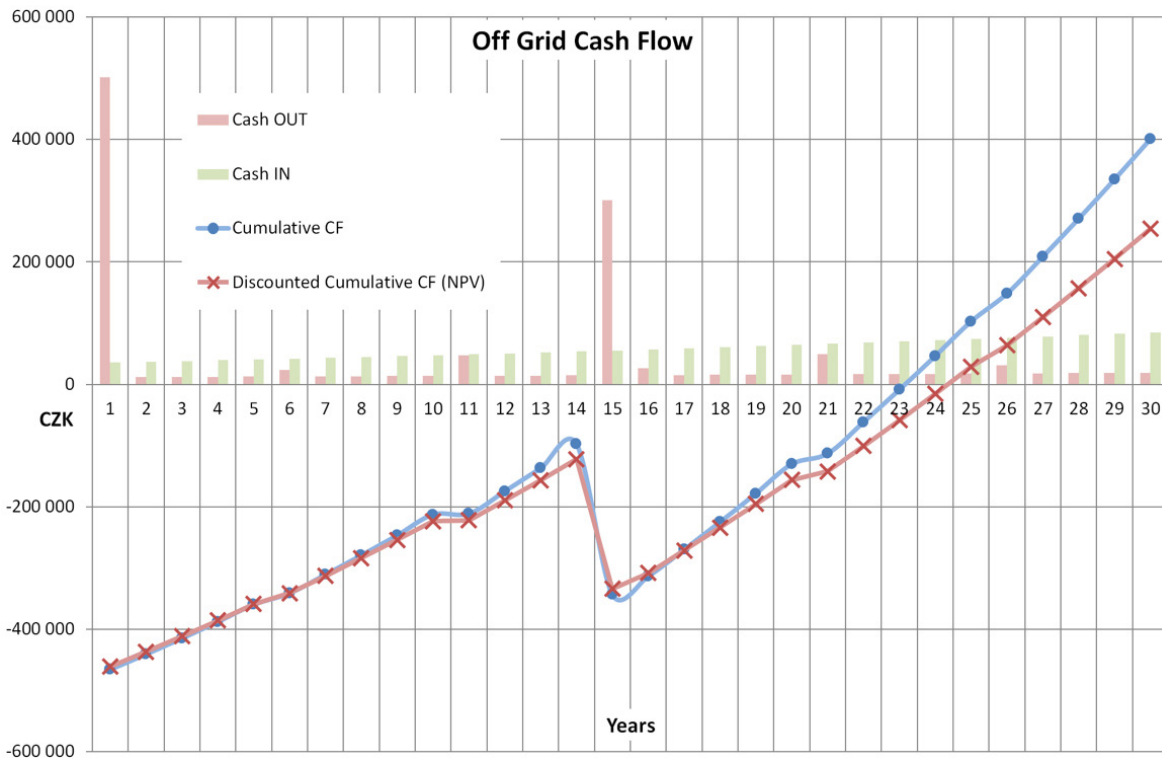


Figure 4: Economic aspects of the scenario "ISLAND" – no subsidy. Source: authors

io "PARTIAL ISLAND", precisely cash flow, cumulative cash flow and payback period. We can observe the similar trends of cumulative and discounted cumulative cash flow, including the year of battery replacement. On the other hand, due to the possibility of electricity surplus selling to the grid and no need to invest to the alternative energy source - gasoline unit, the payback period looks much more interesting for possible investors. Figure 5 shows that the payback period is represented by approximately 18-19 years.

4.2 Impact of public support

As is mentioned in the previous chapters, we will compare the basic scenarios "ISLAND" and "PARTIAL ISLAND" with scenarios including public support of solar electricity, precisely the subsidy "New Green Savings" (NGS), regulated by the Ministry of the Environment of the Czech Republic. For the purposes of our research, we use the highest level of this subsidy - 150.000 CZK (approx. 5868 EUR) for one solar electricity project.

Figure 6 shows us the economic aspects of the scenario "ISLAND", including this subsidy.

It is obvious, that the trend lines of cumulative cash flow and discounted cumulative cash flow are similar like in the basic scenario "ISLAND" without subsidy; however

the impact of subsidy on the payback period is significant. Figure 6 shows us, that in the scenario "ISLAND" including subsidy the payback period is represented by approximately 20 -21 years. Comparing with the payback period in the scenario "ISLAND" without subsidy, we can see that the project will be effective approximately 3 years earlier.

Figure 7 shows us the economic aspects of the scenario "ISLAND" including the subsidy.

Also the scenario "PARTIAL ISLAND" including subsidy shows us better economic results than the same scenario with no subsidy - the impact of subsidy on the payback period is significant. Figure 7 demonstrates that in the scenario "ISLAND" including subsidy the payback period is represented by approximately 9 years, respectively 15 years, including purchase of new battery. Comparing this result with the payback period in the scenario "PARTIAL ISLAND" without subsidy, we can see that the project will be effective approximately 4 years earlier.

4.3 Comparison of selected economic indicators

This sub-chapter is focused on the comparison of selected economic indicators of particular scenarios, precisely cash flow (CF), cumulative cash flow, discounted cash flow, net present value (NPV) and internal rate of return (IRR).

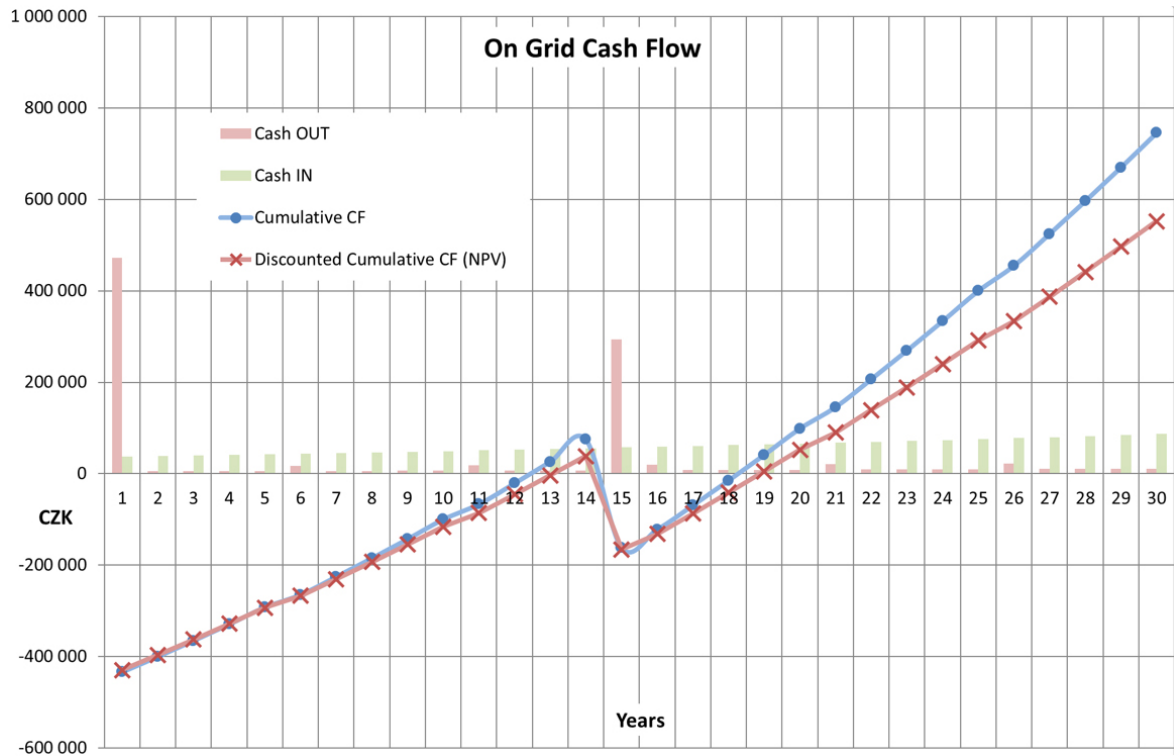


Figure 5: Economic aspects of the scenario "PARTIAL ISLAND – no subsidy. Source: authors

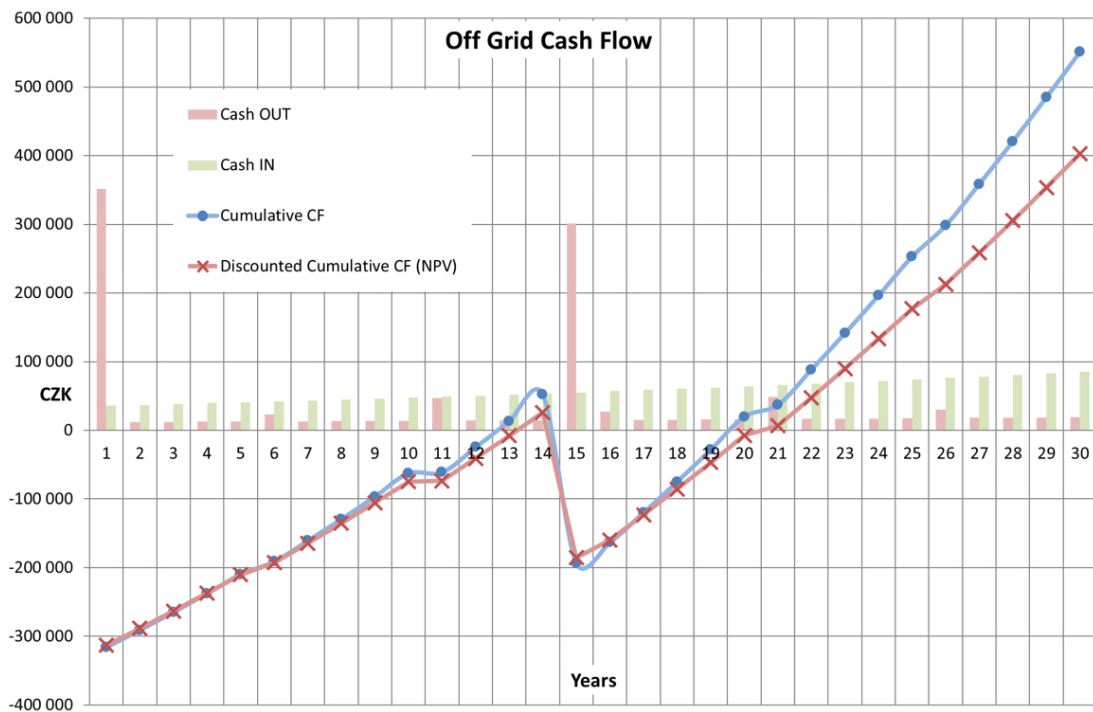


Figure 6: Economic aspects of the scenario "ISLAND" – subsidy NGS. Source: authors

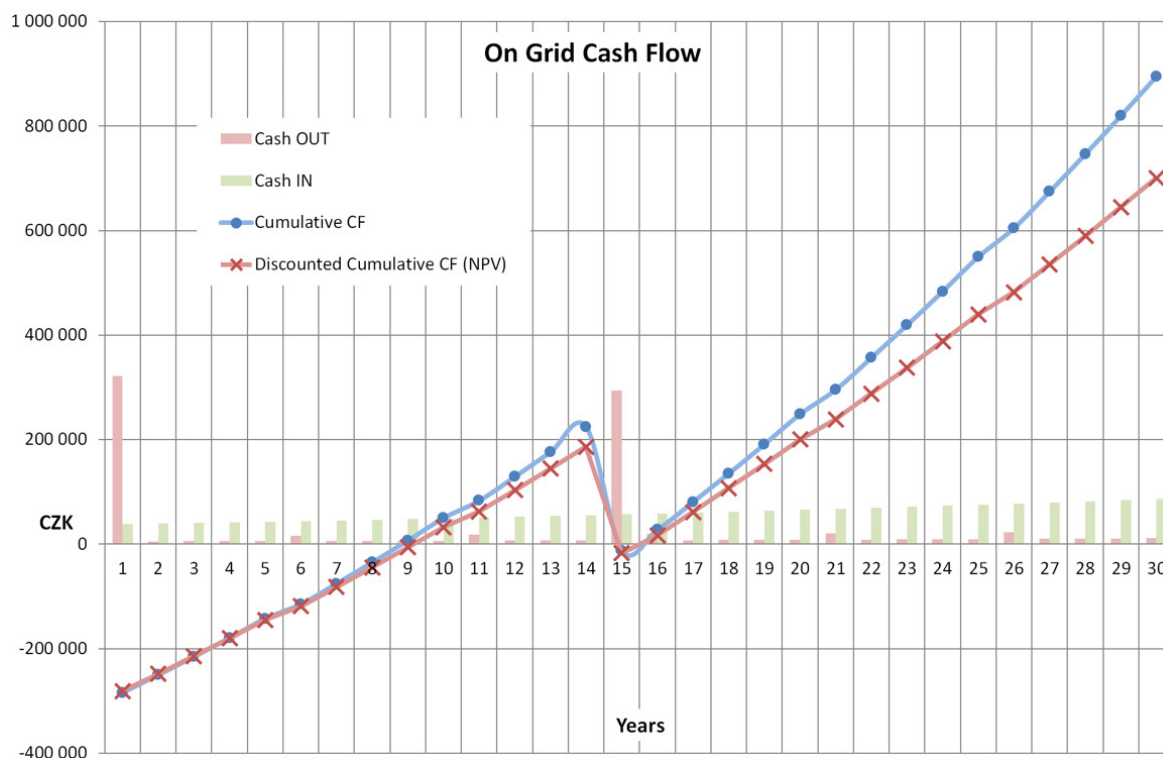


Figure 7: Economic aspects of the scenario "PARTIAL ISLAND" - with subsidy. Source: authors

Table 3: Results for the scenario "ISLAND" (in CZK) – no subsidy. Source: authors

Year	1	5	10	15	20	25	30
Cash Flow	- 465 892	28 107	33 907	- 245 837	48 100	56 601	66 071
Cumul. CF	- 465 892	- 359 733	- 212 738	- 343 551	- 130 251	102 798	400 873
Disc. CF	- 461 279	26 743	30 695	- 211 752	39 420	44 135	49 020
NPV	- 461 279	- 358 797	- 223 341	- 334 016	- 155 999	28 742	254 018
IRR	---	-41,00%	-11,16%	---	-4,33%	0,45%	2,67%

Table 4: Results for the scenario "ISLAND" (in CZK) – with subsidy. Source: authors

Year	1	5	10	15	20	25	30
Cash Flow	- 315 892	28 107	33 907	- 245 837	48 100	56 601	66 071
Cumul. CF	- 315 892	- 209 733	- 62 738	- 193 551	19 749	252 798	550 873
Disc. CF	- 312 764	26 743	30 695	- 211 752	39 420	44 135	49 020
NPV	- 312 764	- 210 282	- 74 826	- 185 501	- 7 485	177 257	402 533
IRR	---	-33,06%	-4,96%	---	-0,29%	3,73%	5,56%

Table 5: Results for the scenario "PARTIAL ISLAND" (in CZK) – no subsidy. Source: authors

Year	1	5	10	15	20	25	30
Cash Flow	- 433 937	37 031	43 081	- 236 460	57 609	66 141	75 502
Cumul. CF	- 433 937	- 292 407	- 100 026	- 161 952	98 666	399 645	745 160
Disc. CF	- 429 640	35 234	39 001	- 203 674	47 213	51 575	56 017
NPV	- 429 640	- 292 999	- 115 629	- 165 381	52 197	291 300	552 485
IRR	---	-33,81%	-5,70%	---	1,34%	4,45%	5,89%

Tables 3 and 4 show the development of particular economic indicators for both scenarios “ISLAND” with no subsidy and “ISLAND” including subsidy.

We can see that the subsidy has significant impact on the values of economic indicators, mainly on cumulative cash flow, net present value (NPV) and internal rate of return (IRR). In case of the scenario “ISLAND” with no subsidy, we can observe negative NPV until 25th year of the project, simultaneously with negative cumulative cash flow and negative IRR. The subsidy causes lower investment costs at the beginning of the project, so NPV, cumulative CF and IRR are in positive values earlier – at the end of 20th year of the project.

Tables 5 and 6 show the development of particular economic indicators for next scenarios “PARTIAL ISLAND” with no subsidy and “PARTIAL ISLAND” including subsidy.

Regarding the scenario “PARTIAL ISLAND”, we can also observe significant impact of the subsidy on particular values of economic indicators. In case of the scenario “PARTIAL ISLAND” with no subsidy, we can see negative NPV until 20th year of the project, simultaneously with negative cumulative cash flow and negative IRR. On the contrary, the scenario “PARTIAL ISLAND” including subsidy shows positive values of NPV, cumulative CF and IRR in 10th year of the project. However, there are also visible high additional costs connected with replacement of the battery in 15th year of the project, which cause negative values of economic indicators in 15th year of the project. Finally, we can see positive values in 20th year of the project.

The values of economic indicators within all scenarios are corresponding with payback periods, which are demonstrated in the previous chapters (Figures 4 - 7).

5 Discussion

Based on the above described results, we should discuss particular scenarios and evaluate the impact of public support on economic efficiency of the households – prosumers projects in the Czech Republic.

We calculate in our model with grant “New Green Savings”, which serves for the households under the New

Green Savings Programme, regulated by the Ministry of the Environment of the Czech Republic. Current grant in the total amount 150.000 CZK (approx. 5868 EUR), used for the purposes of technology investment, represents important motivation for the households to invest to the photovoltaics. Within the model, the influence of the grant on the economic indicators of particular scenarios is significant in both scenarios “ISLAND” and “PARTIAL ISLAND”. The households – prosumers will definitely prefer the scenario with lower payback period, including the subsidy. Based on the economic indicators of particular scenarios, the most suitable for the households seems the scenario “PARTIAL ISLAND” including subsidy; however, the selection of concrete solution will depend on possibilities and preferences of particular households.

It should be also mentioned, that current level of subsidy represents significant motivation for the households, on the other hand, the previous levels of subsidy (before year 2017) were low and had negligible impact on the economic indicators of particular solar projects. Currently, it is also case of the system of feed-in tariffs. As was mentioned before, Energy Regulatory Office (ERO) publishes price decisions in the Energy Regulation Gazette¹⁰, support for renewable electricity generation is guaranteed for 15 – 30 years, depending on particular renewable energy source. The minimal feed-in tariffs for the photovoltaics are guaranteed for 20 years. Based on the current law, feed-in-tariffs for new producers are calculated every year, whereas the calculations are based on the current investment costs. For existing sources, feed-in-tariffs are increased by 2 % a year, with the exception of plants using biomass, biogas and biofuels.

Figure 8 shows us the development of feed-in-tariffs for the electricity generated in solar power plants, depending on the date of the production start.

We can see that the support for solar power plants differs, depending on the date of the production start. Regardless regular annual increase in particular feed-in-tariffs, we can see also different level of support in the first year of the electricity generation and consequent different level of support in the following years. It should be mentioned, that under current Energy Regulatory Office decision, new producers of electricity from solar power plants have guar-

Table 6: Results for the scenario “PARTIAL ISLAND” (in CZK) – with subsidy. Source: authors

Year	1	5	10	15	20	25	30
Cash Flow	- 283 937	37 031	43 081	- 236 460	57 609	66 141	75 502
Cumul. CF	- 283 937	- 142 407	49 974	- 11 952	248 666	549 645	895 160
Disc. CF	- 281 125	35 234	39 001	- 203 674	47 213	51 575	56 017
NPV	- 281 125	- 144 484	32 886	- 16 866	200 712	439 815	701 000
IRR	---	-23,51%	2,21%	---	7,23%	9,35%	10,29%

10 <https://www.eru.cz/en/erv>

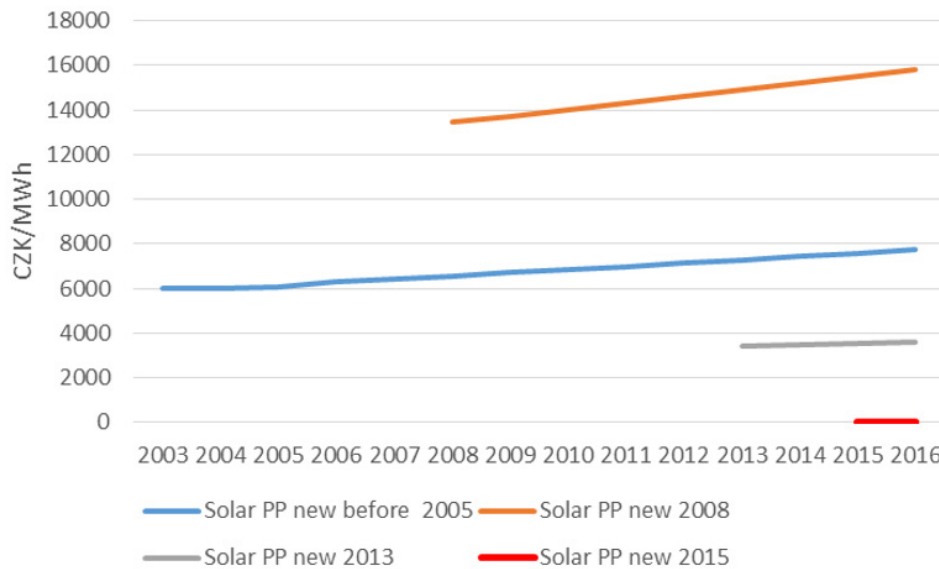


Figure 8: Development of feed-in-tariffs for small solar power plants Source: Zimmermannova, 2017

anteed 0 CZK/MWh of electricity, the price of electricity supplied by them to the grid depends on current market price.

We should also discuss the restrictions of our model. Firstly, the model is based on the original dataset of daily production of electricity from photovoltaic power plant, installed in VSB-TU Ostrava, and daily electricity consumption in typical household, modelled also in VSB-TU Ostrava. These datasets represent also the data restrictions of the model. For the purposes of development of more detailed model and particular scenarios, we would like to collect data from real photovoltaic systems installed in households.

Second restriction is connected with predictions and price trends for the next 30 years within the model; for example price trends of energy accumulation technology represent important part of costs and significant payback period criterion, especially in the scenario “ISLAND”. Currently, we are not able to predict correctly the prices for accumulation systems for the period 2025 – 2040, we can only expect the significant decrease in market price of the accumulation systems and simultaneously higher efficiency of it. Further, it is also hard to predict other factors, as the development of price of photovoltaic panels or market electricity price.

Finally, the model should contain also space dimension, precisely additional variables for the purposes of distinguishing different addresses of particular households – prosumers (see for example Meixnerova et al., 2017). It is important since the natural conditions can have significant impact on both production and consumption of electricity.

Comparing our results with results of international scientific studies in the field of households – prosumers, it

is obvious, that the main focus of these studies is slightly different. For example Flaute (Flaute et al., 2017) observes effects of households – prosumers on the macroeconomic indicators. The authors conclude that both the investments in power generating technologies and the higher income of households – prosumers due to self-produced electricity lead to higher consumption and stimulate economic growth. At the same time, the increase of prosumer households reduces emissions.

Olkkonen et al. (2017) clarify the role of the energy prosumer as a new type of stakeholder and connects prosumer relations to the notion of co-production. Thus, the article offers valuable information for energy companies when they update their business models to embrace prosumer relations and community involvement. Also Bell-ekom et al. (2016) focus on trends which affect current business models of DSOs and electricity production and supply companies. The latter are facing a loss of turnover which needs to be compensated by developing alternative business models. And DSOs have to deal with the new needs on the local grid which also require an adaptation of their business models. Developing business models in cooperation with local energy communities could be an attractive alternative to explore.

Our study can represent additional “brick to the wall”, since our results observe the economic indicators of particular household – prosumer. Particular household – prosumer can also participate as a stakeholder in the local energy grid and cooperate with energy companies – producers, distributors etc.

Regarding general support of households – prosumers in the society, it should be mentioned, that there are two possibilities of households – prosumers encouragement.

On the one hand, it is public support, including both economic instruments (grants, subsidies, feed-in tariffs) and legal instruments (low administrative barriers of solar electricity projects) supporting production of renewable electricity. On the other hand, the second kind of support is represented by particular energy and/or distributional company itself, which can motivate the households offering the motivation level of the electricity purchase price.

As is described in the introduction part, the government of the Czech Republic introduced more institutions for support of renewable energy sources, including the following economic instruments: grants on investments, feed-in tariffs, green-premiums on electricity prices, tax exemptions, tax reductions and refund of taxes. Focusing on the results of our scenarios, we recommend to the government to continue with current system of subsidies, since it contributes to lower payback period of the solar electricity projects of households - prosumers. On the other hand, the level of subsidy should be at the same or higher level, for the purposes of representing the significant part of the investment costs. Low level of subsidy has negligible impact on the economic indicators of households - prosumers. Regarding feed-in tariffs, the minimal feed-in tariff for new solar sources is currently zero, therefore the energy companies and distributors are electricity purchase price setters. Based on this situation, we recommend to the government also to support development of households - prosumers friendly environment in the regional energy markets, since it can lead to mutual benefits on both sides of households and companies and new system of regional electricity grids.

6 Conclusions

The main goal of this paper was to present new agent model of prosumer and to compare two scenarios - "off grid household" and "on grid household". The additional goal was to evaluate the impact of public support of solar electricity on economic efficiency of prosumer household projects (systems). Firstly, the general structure of the agent model of prosumer was developed and the suitable empirical data were collected. Secondly, two scenarios were developed, precisely off grid household (scenario "ISLAND") and on grid household (scenario "PARTIAL ISLAND"). The agent model of prosumer was tested and validated, using the empirical data from VSB-TU Ostrava. Then, both scenarios were compared, focusing on the economic efficiency of particular projects. Finally, the evaluation of the impact of public support of solar electricity on the economic efficiency of prosumer household projects (systems) was provided, including discussion of possible consequences.

Based on our research, it is obvious, that public support - in our case the highest level of subsidy "New Green Savings" has significant impact on the economic indi-

cators of both selected scenarios "ISLAND" and "PARTIAL ISLAND". It causes lower investment costs at the beginning of the project and consequently shorter payback period (3-4 years earlier), positive cumulative cash flow, net present value and IRR in earlier period (approximately 5-10 years earlier, depending on the scenario). However, besides public support, there is also possibility of private support of households - prosumers, represented by the level of electricity purchase price, set by energy and/or distributional companies, which can motivate particular households to invest to photovoltaics.

In the following research, we should focus on the collection of the additional data from real households-prosumers and the expansion of our dataset. We would like also to add spatial variables to the model for the purposes of distinguishing different locations of the households; it can bring interesting results and prepare more sophisticated scenarios. Finally, it is also necessary to try to update the model in regular intervals, based on the development of particular input variables of the model.

Acknowledgements

Presented research was supported by the project TH01020426 "System for active management of decentralized energy units on local level", financed by the Technology Agency of the Czech Republic.

References

- Albrecht, J., Laleman, R., & Vulsteke, E. (2015). Balancing demand-pull and supply-push measures to support renewable electricity in Europe. *Renewable and Sustainable Energy Reviews*; 49 (Sep 2015) 267-277, <https://doi.org/10.1016/j.rser.2015.04.078>
- Bedsworth, L.W., & Hanak, E. (2013). Climate policy at local level: Insights from California. *Global Environmental Change - Human and Policy Dimensions*; 23 (3), 667-677.
- Bellekom, S., Arentsen, M., & Van Gorkum, K. (2016). Prosumption and the distribution and supply of electricity. *Energy, sustainability and society*, 6(1), 22, <http://dx.doi.org/10.1186/s13705-016-0087-7>
- Bobinaite, V., & Tarvydas, D. (2014). Financing instruments and channels for the increasing production and consumption of renewable energy: Lithuanian Case. *Renewable and Sustainable Energy Reviews*; 38 (Oct 2014) 259-276, <http://dx.doi.org/10.1016/j.rser.2014.05.039>
- Bousquet, F., & Le Page, C. (2004). Multi-agent simulations and ecosystem management: a review. *Ecological Modelling*, 176 (3-4), 313-332, <http://dx.doi.org/10.1016/j.ecolmodel.2004.01.011>
- Cai, K., Niu, J.Z., & Parsons, S. (2014). On the effects

- of competition between agent-based double auction markets. *Electronic Commerce Research and Applications*, 13 (4), 229-242, <http://dx.doi.org/10.1016/j.elerap.2014.04.002>
- Cermak, P., Zimmermannová, J., Lavrincik, J., Pokorný, M., & Martinu, J. (2015). The Broker Simulation Model in the Emission Allowances Trading Area. *International Journal of Energy Economics and Policy*, 5 (1), 80-95. ISSN: 2146-4553.
- Chen, J.J. Tan, L., & Zheng, B. (2015). Agent-based model with multi-level herding for complex financial systems. *Scientific Reports*, 5 (article no. 8399), <http://dx.doi.org/10.1038/srep08399>
- Fiosins, M., Fiosina, J., Muller, J.P., & Gormer, J. (2011). Agent-Based Integrated Decision Making for Autonomous Vehicles in Urban Traffic. Advances on Practical Applications of Agents and Multi-Agent Systems. Edited by: Demazeau, Y., Pechoucek, M. Corchado, J.M., & Bajo, J. Book Series: *Advances in Intelligent and Soft Computing*, vol. 88, 173-178, http://dx.doi.org/10.1007/978-3-642-19875-5_22
- Flaute, M., Großman, A., Lutz, C., & Nieters, A. (2017). Macroeconomic Effects of Prosumer Households in Germany. *International Journal of Energy Economics and Policy* 7(1), 146-155.
- Gontis, V., & Kononovicius, A. (2014). Consentaneous Agent-Based and Stochastic Model of the Financial Markets. *Plos One*, 9 (7), article no. e102201, <http://dx.doi.org/10.1371/journal.pone.0102201>
- Hunkin, S., Barsoumian, S., Krell, K., Severin, A., & Corradino, G. (2014). *Thematic Study on Energy Efficiency and Renewable Energies*. CENTRAL EUROPE Programme, April 2014.
- Janda, K., Krška, Š., & Průša, J. (2014). Czech Photovoltaic Energy: Model Estimation of the Costs of its Support. *Politická ekonomie*; 62 (3) 323-346.
- Janssen, M. A., & Ostrom, E. (2006). Empirically based, agent-based models. *Ecology and Society*, 11 (2), art.37. Available from <https://www.ecologyandsociety.org/vol11/iss2/art37/>
- Lagorse, J., Paire, D., & Miraoui, A. (2010). A multi-agent system for energy management of distributed power sources. *Renewable Energy*. 35 (1), 174-182. <http://dx.doi.org/10.1016/j.renene.2009.02.029>
- Lengnick, M., & Wohltmann, Hw. (2013). Agent-based financial markets and New Keynesian macroeconomics: a synthesis. *Journal of Economic Interaction and Coordination*, 8 (1), 1-32, <http://dx.doi.org/10.1007/s11403-012-0100-y>
- Marques, A.C., & Fuinhas, J.A. (2012). Are public policies towards renewables successful? Evidence from European countries. *Renewable Energy*; 44 (Aug 2012) 109-118.
- Meixnerová, L., Menšík, M., & Pászto, V. (2017). Economic analysis and spatial arrangements of engineering SMEs performance in Olomouc region of Czech Republic. *Journal of International Studies*, 10(1), 135-145, <http://dx.doi.org/10.14254/2071-8330.2017/10-1/9>
- MIT (Ministry of Industry and Trade of the Czech Republic). (2015). National Action Plan for Smart Grids (NAP SG). Available at: www.mpo.cz
- MIT (Ministry of Industry and Trade). (2017). *Renewable energy sources in 2015; Results of the survey*. Available at: <https://www.mpo.cz/assets/cz/energetika/statistika/obnovitelne-zdroje-energie/2017/2/Obnovitelne-zdroje-energie2015.pdf>
- Morgan, F.J., & Daigneault, A.J. (2015). Estimating impacts of climate change policy on land use: An agent-based modelling approach. *PLoS ONE*, 10 (5), 21 May 2015, article number e0127317.
- Olkkonen, L., Korjonen-Kuusipuro, K., & Grönberg, I. (2017). Redefining a stakeholder relation: Finnish energy “prosumers” as co-producers. *Environmental Innovation and Societal Transitions*, 24, 57-66.
- Ortega, M., Del Rio, P., & Montero, E.A. (2013). Assessing the benefits and costs of renewable electricity. The Spanish case. *Renewable and Sustainable Energy Reviews*; 27 (Nov 2013), 294 – 304, <https://doi.org/10.24084/repqj14.527>
- Parker, D.C., Manson, S.M., Janssen, M.A., Hoffmann, M.J., & Deadman, P. (2003). Multi-agent systems for the simulation of land-use and land-cover change: A review. *Annals of the Association of American Geographers*, 93 (2), 314-337, <http://dx.doi.org/10.1111/1467-8306.9302004>
- Pawliczek, A. (2011). Czech Photovoltaic Business and Sustainable Development. *The International Conference Hradec Economic Days 2011*. Peer-Reviewed Conference Proceedings, Hradec Králové: Gaudeamus, 2011, 214-218, ISBN 978-80-7435-101-3.
- Průša, J., Klimešová, A., & Janda, K. (2013). Consumer loss in Czech photovoltaic power plants in 2010–2011. *Energy Policy*; 63 (2013) 747–755, <http://dx.doi.org/10.1016/j.enpol.2013.08.023>
- Ryvolová, I., & Zemplerová, A. (2010). The Economics of Renewable Energy – Example of Wind Energy in the Czech Republic. *Politická ekonomie*; 58 (6) 323–346.
- Tang, L., Wu, J., Yu, L., & Bao, Q. (2015). Carbon emissions trading scheme exploration in China: A multi-agent-based model. *Energy Policy*, 81 (1 June 2015), 152-169, <http://dx.doi.org/10.1016/j.enpol.2015.02.032>
- Zajackzowska, M. (2016). Prospects for the development of prosumer energy in Poland. *Oeconomia Copernicana*, 7(3), 439-449.
- Zamfir, A., Colesca, S.E., & Corbos, R.A. (2016). Public policies to support the development of renewable energy in Romania: A review. *Renewable and Sustainable Energy Reviews*; 58 (May 2016) 87–106, <http://dx.doi.org/10.1016%2Fj.rser.2015.12.235>
- Zimmermannová, J. (2017). Is Current Institutional En-

vironment Suitable for Renewable Electricity Generation in the Czech Republic? *Current Trends in Public Sector Research. Proceedings of the 21st International Conference*. Masaryk University, Brno-Šlapanice. 2017, 434 – 442. ISBN 978-80-210-8448-3, ISSN 2336-1239

Zimmermannová, J., & Čermák, P. (2014). Possibilities of Multiagent Simulation Model Application in the Emission Allowances Trading Area. *Procedia Economics and Finance*, 2014, vol. 12, 788-796, [http://dx.doi.org/10.1016/S2212-5671\(14\)00406-7](http://dx.doi.org/10.1016/S2212-5671(14)00406-7)

Zimmermannová, J., & Jílková, E. (2016). Do Economic Instruments in the Czech Republic Support Generation of Renewable Energy? *Economics Management Innovation*; 8 (2) 16-30.

Jarmila Zimmermannová is an Associate Professor and a Vice-Rector for Science, Research and Development at the Moravian University College Olomouc, Czech Republic. In the period 2003 – 2009, she worked at the Ministry of the Environment of the Czech Republic. Her research focuses on financial and economic instruments of the environmental policy, mainly on

ex-ante and ex-post analyses of particular economic instruments in the field of air and climate protection. She is the author of a number of scientific articles and the monograph "Environmental Taxation and Modelling of its Impacts".

Adam Pawliczek is an Associate Professor and a Head of the Department of Management and Marketing at the Moravian University College Olomouc, Czech Republic. His research focuses on SMEs and household economics, management tools or renewable energy. He has published more than 40 articles in scientific journals and proceedings of international conferences.

Petr Cermak is an Associate Professor at the Moravian University College Olomouc, Czech Republic. He earned both his PhD and habilitation in the field of Technical Cybernetics. He also works as a Director of Robotic Laboratory in the Institute of Computer Science in Opava. His research focuses mainly on system modelling using artificial intelligence, fuzzy-neural networks, robotics, digital image processing and analysis.

Državna podpora proizvodnji električne energije s sončnimi celicami in njen vpliv na gospodinjstva – proizvajalce/porabnike energije

Ozadje in namen: Pri razpravah v različnih državnih službah se pogosto pojavi o ideja gospodinjstvih – proizvajalcih in obenem porabnikih energije, predvsem v povezavi z vprašanji energetske varnosti in okoljskimi vprašanji. Zato je glavni cilj tega prispevka predstaviti nov model (programskega) agenta gospodinjstva - proizvajalca/porabnika energije in primerjava dveh scenarijev - „gospodinjstva izklopljena iz omrežja“ in „gospodinjstva na omrežju“. Dodatni cilj je ovrednotiti vpliv javne podpore sončni elektriki na ekonomsko učinkovitost proizvajalcev/porabnikov energije).

Zasnova / metodologija / pristop: model je strukturiran kot model na mikro ravni, ki predstavlja eno gospodinjstvo. Model ima naslednje splošne značilnosti: eno gospodinjstvo z lastno proizvodnjo električne energije (fotonapetostne plošče), akumulator in v primeru „gospodinjstva na omrežju“ tudi priključek na omrežje. Glavni cilj agenta je, da pokrije porabo električne energije v gospodinjstvu z minimalnimi stroški. Model agent je preizkušen in validiran na osnovi empiričnih podatkov.

Rezultati: Najvišja raven subvencij pri izbranih scenarijih pomembno vpliva na ekonomske kazalnike. Na začetku projekta zahteva nižje investicijske stroške in posledično krajše obdobje vračila (3-4 let prej), rezultira pa tudi v pozitivni kumulativni denarni tok, neto sedanjo vrednost in IRR pa sta dosežena v krajšem obdobju (približno 5-10 let prej, odvisno od scenarija).

Zaključek: Državi priporočamo, da nadaljuje s sedanjim sistemom subvencij, saj prispeva k boljšim gospodarskim kazalnikom posameznih projektov sončne elektrike. Po drugi strani bi morala biti raven subvencije najmanj enaka kot v tekočem letu 2017, da bi predstavljala pomemben del naložbenih stroškov. Nizka stopnja subvencije ima zanemarljiv vpliv na ekonomske kazalnike gospodinjstev - projekte prosilcev. Model razvitega agenta je primeren za ocenjevanje gospodarskega vpliva javne podpore na gospodinjstva – proizvajalce/porabnike energije.

Ključne besede: obnovljiva električna energija; fotovoltaika; gospodinjstva; proizvajalci/porabniki; javna podpora; agentski model; energetski model

DOI: 10.2478/orga-2018-0002

An Organizational Framework for Logistic Platform and its Subtypes in a Search for More Logistically Attractive Regions

Brigita GAJŠEK¹, Jure KOVAČ², Benjamin T. HAZEN³

¹ Faculty of Logistics, University of Maribor, Mariborska cesta 7, SI-300 Celje
brigita.gajsek@um.si

² Faculty for Organizational Sciences, University of Maribor, Kidričeva cesta 55a, SI-4000 Kranj

³ Department of Operational Sciences, Air Force Institute of Technology, Wright-Patterson Air Force Base, OH, USA

Background and Purpose: Regional sustainable economic growth on logistics bases requires the coordinated development of infrastructure, information and communications technology, and proactive education of logistics specialists. The goal is reachable with regional logistics platforms (RLPs). This current research develops a theoretical model for RLPs, consisting of (1) basic constituents, (2) an implementation area, and (3) stakeholders' and operational benefits.

Design/Methodology/Approach: We employed a balanced qualitative and quantitative approach using multiple case study and survey methods.

Results: Systematic case study research has identified 12 "most frequently" highlighted RLP constituents and 3 areas of implementation, which were further proven by a survey. RLP's beginnings may be spontaneous until a critical mass of interested stakeholders emerges with a clear vision and start-up energy for a breakthrough. A theoretical model for RLPs is proposed.

Conclusion: The secret of a successfully developing a logistics region lies in its ability to develop a mechanism for the managing and coordinating a particular logistics system's development and operation, an area that should be further researched. This study's findings provide valuable insights into the many aspects of RLPs, which can be useful for regional authorities and business owners who are eager to stimulate regional economic growth.

Keywords: *logistics platform; organizational structure; networking; governance, regionalization; transportation*

1 Introduction

Market globalization and increased competition urge producers, distributors and vendors to integrate their operations, thus developing widespread networks for managing materials, products, information and capital (Villa, 2001). To aid businesses in these efforts, scholars (e.g. Nguyen and Tongzon (2010), Liedtke and Murillo (2012), and Monios (2015)) call for the need to better integrate intermodal transport and logistics, and to understand the

related, evolving governance relationships. Many years of research, interdisciplinary thinking and experiments in practice have shown the need for organizational restructuring, and alternative modes of governance. New structures provide an opportunity for improved efficiency, higher utilisation of resources, new technologies, innovation, improved interoperability among transport modes, coordination of the supply chain (SC), removal of administrative barriers, and sustainable environmental behaviour. However, coordinated approaches toward policy-making that

will evoke such improvements have yet to be fully defined. In this paper, we propose and examine one such approach by defining the concept of a regional logistics platform, its basic constituents, geographic/business areas of implementation, and implementation effects.

Today, globalization and the use of information and communication technologies (ICT) reduce dependency of businesses on their geographic locations (Lucking-Reiley & Spulber, 2001; Sahney, 2015). With e-commerce's rapid development, the business world's focus is passing from quantity production to circular economy (Weng & Zhang, 2015). Also, transport costs for long-distance cargo movements are gradually decreasing (Twrđy, Peterlin, Žaucern & Jenček, 2007). This decrease is due to many reasons, such as the use of new optimal routing and refueling policies (Suzuki & Dai, 2012) and the advent of structural integration of SCs (Morash & Clinton, 1997). It is becoming obvious that for global trade to increase the effectiveness of physical exchange between geographically dispersed enterprises, it is insufficient merely to modernize ICT in response to more frequently required physical redirection of trade flows to new geographical areas.

Over time, organisations have implemented new and maturing SC strategies (Christopher & Towill, 2002) as well as contemporary tools and techniques in logistics and transportation (Vogt, 2010). Furthermore, these advances have led to adopting new SC practices that have elevated the role of SC management and SC integration within many organisations (Stevens & Johnson, 2016). Researching SCs is in the forefront of scientists' efforts, yet changing SCs' impact at the regional level is largely overlooked.

Business-oriented regions are striving to become more attractive for settlement and business activities in the eyes of the general public, businesspersons, companies, and other stakeholders. In these cases, the emphasis is on an "attractive" and "friendly" region, and more precisely, a "logistically attractive and friendly" region. Goods from China, for example, can arrive through different transportation modes to inner-European states via Western or Southern ports as continental entry points. This detail may be unimportant for a specific freight forwarder, producer or SC; but it is essential for any country that operates and develops based on tax revenue.

We consider three key functional groups as enablers of global material flow: (1) the SCs as a source of objects in the material flow, (2) providers of material flow (logistics, transportation, customs, information-communication enablers) and (3) the regions as territory managers and supervisors of infrastructure resources. Stevens and Johnson (2016) described the SC operating model of the future as taking the form of autonomous, adaptive fulfilment communities. Contemporarily, logistics and transportation in any region are a medium allowing exchange between different business formations that need not necessarily be located within the region. SCs may also develop their

logistics systems, but this practice is no longer the only one possible due to the large financial input and the loss of flexibility. According to the European Commission (2015), logistics service providers perform about one-half of all logistical activities, but the degree of outsourcing in contract logistics remains low, which does not allow them to tap into their full potential. The European logistics market accounts for € 960 billion in 2014 and transports 18.6 billion tons (Kille, Schwemmer & Reichenauer, 2015). Indeed, the third-party logistics industry is expanding (Marasco, 2007), and the competition between countries for taking over material flows as a result of SC's industrial activities is increasing. Evidence suggests that industry prefers globally established logistics providers rather than solely regional providers (Schwemmer, 2016).

Li-Ekenstedt (2004) and Du and Bergqvist (2010) identified several important factors in multinational corporations' decision-making processes regarding determining where to locate logistics infrastructure. These factors imply (1) that a firm's relocation decision, or the triggering of material flows through a select territory, requires consideration beyond simply a region's geographically favourable location and (2) that regions and cities with historically favourable geographical locations could influence the degree of their attractiveness in conducting production and logistics activities. The challenge clearly lies in how to encourage breakthrough activities within the logistics sector with the support or guidance of regional policy makers and industry stakeholders.

In reviewing developments in various European regions, we have noticed that some regions (e.g., Zaragoza Province in Spain) seem to know exactly how to become logistically attractive and, subsequently, realize economic growth (Sainza, Bañosb, Valc & Jose, 2013). In reviewing the examples of France (Francetech, 2001) and Switzerland (Swiss Logistics Platform, 2015), we see the possibility of increasing a region's logistics attractiveness by establishing *regional logistics platforms* (RLPs). Logistics performance indices (LPI) for both countries were ranked in the top quintile of the World Bank Group's survey on trade logistics for 2014 (Arvis et al., 2014) and are considered to be „logistics friendly.“ France's transport and logistics market is estimated at € 124.7 billion, making it the second largest logistics market in Europe after Germany (Kille, Schwemmer & Reichenauer, 2015). However, viewing the logistics platform (LP) as the concept for promoting economic growth within regions fails to coincide with traditional views.

Traditionally, LP has been a hypernym for Automotive Supplier Parks in the German automotive industry (Pfohl & Garies, 2005), freight gateways or hubs (Bolumole, Closs & Rodammer, 2015), intermodal logistics platforms (Cambra-Fierro & Ruiz-Benitez, 2009), logistics centres (Meidute, 2005), cross-docks (Kinnear, 1997), and similar formations. In this paper, we will further explore the LP

concept's use within regions or countries because we suspect that the modern LP interpretation has outgrown the hypernym and will soon develop into a hierarchical, multi-level structure (Gajšek & Grzybowska, 2013; Gajšek & Rosi, 2015; Grzybowska & Gajšek, 2016).

The purpose of this paper is to define the concept of LP, with special focus on RLP as a sub-type, its basic constituents, geographic/business areas of implementation, and the implementation's effects. We consider how LPs and also RLPs involve not only constructing buildings, purchasing machinery and employing people, but also managing and coordinating regional logistics systems' development and operation. This research consolidates different views on who should initiate/develop /finance/manage/operate the logistics system and its resources within a region as well as what "logistics" should entail. Our proposed solution takes the form of an RLP model, which can help to inform regional growth and subsequent economic development.

2 Theoretical background

The complexity of today's SC systems means that it is nearly impossible to explain an SC phenomenon with a single theory (Chen, Daugherty & Landry, 2009). Based on our review of the literature, we conclude that scholars commonly use transaction cost economics (TCE), resource-based view (RBV) and strategy-structure-performance (SSP) framework when examining formation and structure of LPs. Addressing RLPs, which enables SC's global operations in a certain region, however, requires an even broader theoretical framework, including new institutional economics and social network theory.

According to TCE, firms adopt a variety of relationships with each other to lower transaction costs associated with a purely transaction-based arrangement whereby relationships are based on market contracts (Coase, 1937; Williamson, 1975; Berquist & Monios, 2014). Basic tenets of TCE apply both to inter-company relations and intra-company operations, and considerations based on this theory support the value of integration of production and logistics (Chikan, 2001). Berquist and Monios (2014) described how RBV is based on the management of resources within the firm (Barney, 1991; Wernerfelt, 1984) and increasingly, across all actors in an SC (Dyer & Singh, 1998; Lavie, 2006; Peters et al., 2011; Schmoltzi & Wallenburg, 2011). Following an RBV approach, increasing the number of partners in the cooperation agreement provides more resources from which to benefit, whereas according to TCE, communication and coordination become more complex as the number of organizations increases (Schmoltzi & Wallenburg, 2011). RLPs are pools of resources whose consistency and planned regional use could contribute to greater efficiency of the regional system.

Applications of TCE and RBV provide the basis for constant improvement of existing and new organizational

forms of governance models, based on the integration of new organizations and stakeholders, and are widely employed in logistics research (Berquist & Monios, 2014). Governance can be defined as a process of distributing authority and allocating resources and includes managing relationships, behaviour, and processes to achieve a desired outcome (Berquist & Monios, 2014). Addressing regional logistics and transport issues is beyond the scope of operators and owners of logistics/transportation infrastructure components.

Drawing on the new institutional economics' body of literature, researchers have explored governance models in individual logistics and transport organizations, to include topics of port governance (Monios & Wilmsmeier, 2013) and intermodal terminal governance (Berquist & Monios, 2014). The question of how to comprehensively govern logistics and transportation activities in the region to optimize the economic and environmental well-being of the region remains unanswered.

According to strategy-structure-performance (SSP) theory, a firm's strategy drives the development of organizational structure and process, which should also apply to the regional level (Miles et al., 1978) and SC's (Clifford Defee & Stank, 2005; Perez-Franco et al., 2016). By passing ownership or management of state-owned enterprises to the private sector, the state loses direct control over a given regional logistics system, which can shape performance and environmental friendliness of trade flows. There is a dearth of understanding regarding organizational models connecting antecedents of regional logistics and SC capability that would stimulate economic growth within a defined region (Closs et al., 2014) or descriptions of "the conscious pursuit of joint action" (Schmitz & Nadvi, 1999). The logical next step would be to define and describe "regional governance" as an outcome of proactive inter-organizational action aimed at capitalizing on localized resources so as to drive competition with other regions. Bolumole and colleagues (2015) stated that regions compete by providing a platform to maximize productivity in ways that support their economic development goals of job creation, attracting investments, and achieving a high return on infrastructural investments. Also, one might also include preserving agricultural land and living environment.

These advances can be seen through the lens of social network theory. In all subfields of political science in the last third of the twentieth century, the world witnessed a transformation of political order from organizations/hierarchies (and markets/anarchies) toward networks (Blatter, 2003; Marolt et al., 2016). Intermodal terminals are no longer exclusively controlled by a central unit like the state. Rather, controlling devices are dispersed, and material resources and information are shared by a multiplicity of divergent actors. The coordination of these actors is not the result of "central steering," but instead emerges through the purposeful interactions of many individual actors.

3 Literature Review

While searching for ways to make the region logistically friendlier, a review of existing literature has led us to conclude that the LP model is one of the contemporary business strategies that has attracted broader attention in the last decade. Academic literature reveals that LPs were sometimes equated to cross-docking warehouses at the turn of the millennium (Cambra-Fierro & Ruiz-Benitez, 2009; De Souza, Da Silva Costa & Gobbo Junior, 2007; Du & Berqvist, 2010). The evolution of logistics (Rutner, Aviles & Cox, 2012) caused a widespread adoption of the LP concept outside the boundaries of individual enterprises and SCs. In academic literature today, there is no consensus on what an LP is. Authors use the term in a wide variety of contexts, ranging from a group of workers (Del'olmo & Lulli, 2004) to a means for exchanging and evaluating all types of information that may affect activities within the supply channel (Váncza, Egri & Karnok, 2010). On the one hand, an apparent gap exists in research and expert literature; on the other, the practice strongly indicates a need for efficient logistics operations both inside and outside the boundaries of individual enterprises/SCs. Worldwide, several logistics trials and pilot projects have been dedicated to establishing LPs or in some cases RLPs, going beyond the framework of a logistics center. In practice, this situation confirms that strictly equating the LP or RLP¹ with a cross docking warehouse is no longer possible. Our survey was guided by the assumption that an (R)LP involves not only constructing buildings, purchasing machinery and employing people but also establishing a mechanism for a regional logistics system's development and operation.

A review of the academic literature in this field revealed 27 articles mentioning the (R)LP concept. Each of them relate to a specific example taken from practice (i.e., some fashion of case study) (Figure 1). The authors endeavoured to present a comprehensive definition of LP, but the definitions differ because the LPs were studied at different levels of detail as well as in different circumstances and time periods. According to Rutner et al. (2012), the evolution of logistics has spanned six eras and is still unfolding. Logistics' development involved short movements from farms to markets to movements across the globe today, in particular with respect to the implementation of intermodalism (Jennings & Holcomb, 1996). Thus, logistics' evolution analogously reflected on evolution of LP and its subtypes.

In reviewing the academic literature, we identified important findings in the correlation of the structure, the implementation area, and the LP concept's characteristics. (Figure 1). The *structure* refers to observed constituents mentioned in conjunction with an individual LP. The *area* is business or geographic space in which the LP is imple-

mented and not merely a geographic space determined by unique geographic coordinates. The literature review also revealed that in practice, implementing an LP can be independent of physical location because some LPs can be moved within the geographical space while maintaining their constituents and characteristics. For example, when an LP is equated to a warehouse, the specific company can build several identical LPs in different locations across the globe. An LP's *characteristics* include the type of ownership, the strategic objectives' existence and content, the operations' effects, and the types of operational phases in which stakeholders are involved.

Upon reviewing the literature, we observed several areas the LP concept covered: company, SC, country, and region. Consequently, we first propose the following division of LPs for verification: company LP (ComLP), supply chain LP (SCLP), country LP (CouLP), and RLP. The latter is the subject of our current research. Considering RLP phenomenon's newness and the above review, the following research questions were developed to guide our investigation regarding how RLPs can lead to more efficient SC operations, SC operations' growth at a regional level, and characterizing logistics-friendly locations:

- RQ1. What are the most frequently highlighted LP constituents concerning company, SC, region, and country?
- RQ2. Is RLP formation a result of established regional strategies?
- RQ3. What are RLP implementations' effects?

4 Methods

Considering the research questions as well as Golicic, Davis and McCarthy's (2005) recommendations, we used a balanced research methodology that included both qualitative and quantitative approaches.

4.1 Multiple case studies

Our reasoning for using a qualitative approach was that the RLP is a new phenomenon and comprehensive theory is not available for its interpretation. The research included a study of multiple LPs through detailed, in-depth data collection and a report on case descriptions. We examined multiple case studies with the same protocol to check for repetitive patterns. Construct validity was ensured in the following ways: using data collected from multiple sources for the purpose of triangulation, following a precisely described methodology, ensuring transparency and traceability during data collection and analyses, and having participants review transcripts and case reports.

Based on the previously described literature review, we concluded that LPs are divided into the following four

¹ LP or RLP – abbreviated R(LP)

Type of LP				
	Company LP	Supply chain LP	Country LP	Regional LP
Constituent Parts of LPs				
Transportation infrastructure			√	√
Logistics infrastructure	√	√		√
Technological equipment/logistic specialists	√	√		
ICT to support logistics' activities	√	√		
Authors				
	Abrahamsson et al. (2003); Dell'Olmo and Lulli (2004); Lieb and Bentz (2005); Pekkarinen and Ulkuniemi (2008); Lin et al. (2010); Nunez-Carballosa and Guitart-Tarres (2011); Bonev et al. (2015)	Pfohl and Gareis (2005); Sanchez and Villalobos (2007); Vánca et al. (2010); Sprague and Woolman (2011); Almotairi (2012); Gattuso and Cassone (2012); Guyon et al. (2012);	Nunez-Carballosa and Guitart-Tarres (2011)	Dubke et al. (2006); De Souza et al. (2007); Johannsen and Kristiansen (2007); Mangan and Lalwani (2008); Lin and Ho (2009); Leal and Pérez Salas (2009); Cambra-Fierro and Ruiz-Benitez (2009); De Carvalho et al. (2010); Lima et al. (2011); Lăpăduși and Brăncuși (2011); Antún and Alarcón (2014); Mozart da Silva et al. (2014)

Figure 1: Constituents and stakeholders in relation to different LPs

groups, according to the area of implementation: ComLP, SCLP, RLP and CouLP. This division served as the primary guide for determining the number of practical cases and in making the selection. For each of the four groups, two or three replications were retrieved to verify the similarities/contrasts of results among replications within and among groups, as recommended in Ellram's (1996) work.

Because relatively few companies, SCs, countries, and regions publicly discuss their LPs, this study used a purposive sample. To select high quality cases, several academics were contacted. We compiled a list 36 LPs of various types and then identified their web and gatekeeper email addresses. In reviewing their websites and interviewing local logistics experts, we discovered that some initiatives were ended, suspended, had no real activity, or eventually failed. Only 10 logistics platforms of the 36 identified were able to make a breakthrough and continue evolving.

Email correspondence was sent in January 2014. The correspondence included a survey description and a request for recipients to be interviewed. We received four responses within one week. The remaining potential participants were solicited, but no other responses were received. The four persons who responded were interviewed

via Skype. As part of the case study method, we used not only semi-structured interviews with competent employees but also structured observations of LP's web pages and other documentation, and content analyses of records and artefacts to provide validity through triangulation.

4.2 Survey

We surveyed logistics professionals employed in four types of organizations (logistics, production, educational/research, public body) from three countries. Singapore is the world's busiest transshipment hub, handling about one-seventh of the world's container transshipment throughput. Poland ranks in the top quintile of the logistics performance index (LPI), and Slovenia ranks in the second quintile of LPI (Arvis et al., 2014).

The selection of logistics companies was based on companies classified under „Section H - traffic and warehousing: medium and large enterprises,“ and the selection of production companies was based on companies classified under „Section C - manufacturing: large enterprises“ as found in the Standard Classification of Activities. The

selection of educational/research institutions was based on higher education institutions that provide students with cutting-edge logistics knowledge. The respondents selected from public bodies (PBs) included those employed in state authorities, at the Chamber of Commerce or its affiliates and logistics associations' personnel. Only key experts from the logistics field were included.

To ensure the questionnaire's clarity and relevance as a survey instrument, three academic experts and two industry experts were asked to review it. Their input was used to develop the final questionnaire, which, excluding the demographics section, consisted of three questions with sub-questions. Responses were provided in the form of a five-point scale.

The survey was web-based. Qualified respondents and their relevant contact details were collated with the assistance of the Slovene Chamber of Commerce, the Poznan University of Technology and the National University of Singapore. Data were collected over a three-week period in March 2014, yielding 220 completed surveys: 89 in Slovenia, 95 in Poland, and 36 in Singapore. In Slovenia, two responses were excluded from the analysis because the respondents indicated that their companies no longer operated in the logistics industry. In Poland, 22 questionnaires of the 95 sent were received without demographic data from respondents, who answered with „No“ or „Not sure“ for the questionnaire's first question. These questionnaires were excluded from further detailed analysis. As a result of the small sample sizes and non-normally distributed data, two non-parametric tests were used to verify discrepancies: the Kruskal-Wallis H test and the Mann-Whitney test.

The first question was: Have you been exposed to the idea of a „logistics platform“ before? In Singapore, 34 respondents answered with „No“ and two with „Not sure“. Only two questionnaires with a „Yes“ response could be included in our detailed analysis. On the basis of this outcome, we concluded that the term „logistics platform“ is little used/known in Singapore. But this does not prove that similar or even identical formations do not exist in the country.

Based on respondents' answers, the remaining questionnaires were divided into two groups: one being respondents who had previously encountered the LP concept (67.5% of those questioned), the other being those who had never encountered the LP concept or were uncertain (32.5%).

The second question was: What elements should be included in the characterization of logistics platforms? We provided the respondents with the description of 12 constituents of LPs, as determined by reviewing the academic literature and case studies. This question consisted of 13 sub-questions, 12 „closed“ and one „open.“ The latter allowed for the inclusion of one or more constituents that may have been overlooked.

The third question was meant to examine perceptions

about the geographic/business areas. Within this context, we attempted to determine the range within which LPs had been associated, i.e. whether LPs as perceived by the respondents had manifested themselves at the company, SC, country, or regional levels.

5 Results

5.1 Results from Case Studies

In exploring case studies, we focused on the structure, application area, and benefits of applying the LP concept in practice. We selected ten representative cases of LPs according to the geographic/business areas in which individual LPs operate:

- Company LPs: DIA (operates in Brasil, Argentina, Spain and China), GEFCO (a global logistics player), Rail Cargo Austria;
- Supply chain LPs: EURO-LOG/24plus, DEUTZ AG/AX4 LP (operates in Argentina, USA, Spain, Germany, China);
- Regional LPs: Femern Belt LP, Logistics in Wallonia (Belgian), Zaragoza LP (Spain);
- Country LPs: France as a LP, the Swiss LP (LPI in the top quintile);

What are the most frequently highlighted LP constituents regarding company, SC, region, and country?

Systematic case study research has identified 12 “most frequently” highlighted LP constituents: geographical position, business environment, traffic infrastructure, logistics infrastructure, logistics technological equipment, logistics technology, ICT logistics support, logistics specialists, logistics companies, regulations for logistics companies' needs, a joint interactive portal, and an organized group of stakeholders. In addition, the data revealed differences in highlighted constituents according to the geographic/business area in which an individual LP operates (See Figure 2). Each non-coloured box at the intersections of constituents and LP types in Figure 2 indicates that a given constituent is not frequently mentioned in connection with a particular type of LP.

We may conclude that the same constituents are used to describe RLPs in regions and CouLPs in countries. This similarity coincides with many authors' opinion that a country is a type of region. That is, in cases of CouLPs and RLPs we consider an RLP a type of LP similar to how a country is a type of region.

By creating matrices of categories and conducting a cross-case examination in search for patterns, it was found that geographical position is always emphasized in relation to CouLPs and RLPs. Despite an initially perceived similarity, ComLPs and SCLPs differ. In the case of the ComLPs and SCLPs, geographical position refers to a spe-

cific location within a broader area (i.e., a specific street address), while with RLPs and CouLPs, geographical position refers to a wider area of the region/country. In the case of ComLPs, infrastructure is privately held, whereas, in the case of RLPs and CouLPs, infrastructure is publicly owned or in a public-private partnership. Logistics experts are also mentioned in relation to all three areas. Another difference is that CouLPs and RLPs plan and maintain training systems for logistics experts, while companies employ logistics experts, enhancing/renewing their human resources within ComLPs.

Is RLP formation a result of established regional strategy?

In all examined cases, the emergence and operation of LPs, regardless of type, proved to be a result of realizing certain strategies, namely:

- Company level: To develop effective logistics to increase a company's competitiveness;
- SC level: To effectively communicate with most partners through a single interface and to achieve and maintain the SC's competitiveness;
- Country and regional level: To create a favourable business environment for attracting and operating logistics and manufacturing companies and to increase the economic welfare of the country/region.

LPs do not develop by accident. Their beginnings may be spontaneous until a critical mass of interested stakeholders emerges with a clear vision and start-up energy for a breakthrough. All LPs are centrally managed and based on logistics and process knowledge.

RLPs and CouLPs have similar, if not identical, strategies. Their only difference lies in the characteristics of the geographical area in which they operate. In the case of CouLPs, areas are clearly outlined by a country's borders.

What are the effects of RLP implementation?

Considering the data, we observed many benefits of LPs' existence and operation. The most important one is making the region more logistically friendly. We synthesized the rest by the following area types:

- Company level: companies equalize LP within a distribution centre, construction of which can result in increased flexibility, responsiveness, and sustainability of distribution activities, the effective adaptation of the company's logistics activities to changes in marketing and sales strategy, feasible and timely business expansion into new markets and lower costs of logistics for companies.
- SC level: The standardization of logistics processes, lower logistics' costs on the SC level, faster material flows, less operational work/more analysis, the rapid integration of new partners, fewer negative impacts of cultural differences (major obstacle according to

Tušar et al. (2016)).

- Country and regional level: The dissemination of knowledge in the field of logistics, balanced/innovative/sustainable development of the logistics sector in the country/region, an attractive business environment for the placement and operation of (logistics) companies, clear guidelines for the development of a logistics sector in the region, joint participation of the country/regional logistics sector in the market.

Again, we noted almost no major differences between the reported benefits of regional and country LPs.

During the case study, we observed a European logistics platform that occurred in 2013 (European logistics platform 2015). Its existence could not be predicted from the review of scientific articles. We understand this new formation as an attempt of the European Union's logistics specialists to eliminate the disadvantage of other types of researched LPs that are of „distinctly local interest“ in a narrow geographic/business area. This is probably one of the drivers for the emerging hierarchical LPs (e.g., the European logistics platform).

5.2 Survey Results

Of the 160 participants in Slovenia and Poland who returned questionnaires, 67.5% were already familiar with the LP concept. According to the binomial test's results, it may be assumed that fewer than 70% of logistics managers employed in logistics companies ($p=0.045$) and fewer than 75% of logistics managers employed in non-logistics companies ($p=0.027$) had encountered the LP concept.

The data collected from the study's survey were analysed in three phases, as described below. During each phase of the analysis, the presence of statistically significant conflicting opinions among Slovenian and Polish respondents was also verified.

The relationship between each constituent and the concept of LP

The 52 Slovenian and 56 Polish individuals familiar with LP were asked which constituents the term LP included, irrespective of where the term had been observed. The vast majority of respondents confirmed that using LP more or less strongly encompasses all proposed constituents. Few respondents selected „Did not include.“ These were: 12 for business environment, 11 for geographical position, 11 for joint interactive portal, 10 for traffic infrastructure, nine for organized group of stakeholders, eight for logistics specialists, seven for regulations for logistics companies' needs, five for ICT logistics support, two for logistics technological equipment, one for logistics technology, and one for logistics companies.

Results of the Kruskal-Wallis H test (Field, 2005) and Mann-Whitney test indicate that different types of or-

organizations (LC, PnLC, PBp) within and across different countries do not have significantly different perceptions in terms of the affiliation between each of the proposed constituents and the LP concept.

The relationship between each geographic / business area and the concept of LP

The participants were also asked to identify areas (company, SC, country, region) in which LPs were implemented and to what extent. The respondents almost confirmed that LPs were implemented in all proposed areas. Only a few respondents selected „I completely disagree. These were: 35 for implementation of LP in a single organization, 17 for implementation of LP on SC scope, nine for implementation of LP on a country scope, and four for implementation of LP on a regional scope. The results of the Kruskal-Wallis H test and Mann-Whitney test indicate that different types of organizations within and across different countries do not have significantly different perceptions of the types of geographic/business areas in which LPs are implemented and the extent to which they are implemented.

The relationship between each constituent and each geographic/business area

Nearly all respondents confirmed that all of the constituents and areas proposed were included in the written and

oral sources that the respondents used to become familiar with the concept. Since none of the respondents entered an additional constituent or area, we assume that all constituents and areas were included in the model and questionnaire.

Based on the case study's results, we expected that respondents would confirm our observed links between the proposed LP constituents and the geographic/business areas in which LPs are implemented. To verify, we used bivariate correlation (more specifically, the Spearman correlation coefficient). The results are presented in Figure 2.

Respondents observed a weak link between company area and the following constituents: logistics technological equipment ($r_s=0.375$, $p<0.01$); logistics technology ($r_s=0.322$, $p<0.05$), ICT ($r_s=0.300$, $p<0.05$); and logistics specialists ($r_s=0.283$, $p<0.05$). Furthermore, respondents perceived a weak link between the SC area and the following constituents: business environment ($r_s=0.304$, $p<0.05$); logistics infrastructure ($r_s=0.276$, $p<0.05$); logistics technology ($r_s=0.287$, $p<0.01$); ICT ($r_s=0.346$, $p<0.05$); and logistics companies ($r_s=0.322$, $p<0.05$). Respondents moderately associated the area of SC with logistics technological equipment ($r_s=0.551$, $p<0.01$) and logistics specialists ($r_s=0.484$, $p<0.01$) and observed a weak positive correlation with company area and business environment ($r_s=0.355$, $p<0.05$) and transport infrastructure ($r_s=0.335$, $p<0.05$), and a moderate correlation with geographic loca-

Constituents	Case study				Survey			
	Geographical/Business Area				Geographical/Business Area			
	Com	SC	Cou	R	Com	SC	Cou	R
Geographical position							.464**	.476**
Business environment						.304*	.355*	.416**
Traffic infrastructure							.335*	.495**
Logistics infrastructure						.276*		
Logistics technological equipment					.375**	.551**		
Logistics technology					.322*	.387**		
ICT logistics support					.300*	.346*		
Logistics specialists					.283*	.484**		
Logistics companies						.322*		.361**
Regulations for logistics companies' needs								.268**
Joint interactive portal								
Organized group of stakeholders								.392**

Figure 2. Correlations between constituents and geographic/business areas, based on case study and survey data

*. Correlation is significant at the 0.05 level (2-tailed)

**. Correlation is significant at the 0.01(2-tailed)

tion ($rs=0.464$, $p<0.01$). According to the respondents, the regional area is weakly associated with logistics companies ($rs=0.476$, $p<0.01$) and organized group of companies ($rs=0.392$, $p<0.01$) and is moderately associated with geographic location ($rs=0.474$, $p<0.01$), business environment ($rs=0.416$, $p<0.01$), and transport infrastructure ($rs=0.495$, $p<0.01$).

6 Discussion

The LP concept is contemporary and evolving mostly in the EU and South America. The outcomes of the Singapore survey suggest that although participants from Singapore were unaware of the “logistics platform” by name, the country developed one named Singapore logistic hub, an obvious theoretical example of RLP as LP’s sub-type. Logistic hub is a platform for inter-organizational links that would enact “something more within a specific local environment” in order to gain more in the field of logistics (Gajšek & Rosi, 2015). LP is a hypernym, developing itself into a hierarchical, multi-level structure. Later is concluded on results of above described research, in which, in the first step, the characteristics of professional terms within hypernym were defined. In the second step, four sub-types of LP were defined according to observed repetition patterns. Four geographic/business areas of implementation were defined, namely company, SC, country, and region. Scientific articles, mentioned in the literature review, suggest that the term LP is used globally, but, as noticed, with different frequencies in different parts of the world. Company’s and SC’s LPs are evidently globally present. Multi-level structure, in the sense that the ComLPs are parts of the SCLP, the SCLPs are parts of the CouLP and one or mere CouLPs are parts of the RLP, is logical and demonstrable because of the nature of direction of material flow, which is present between companies within supply chains, which operate within countries and regions. It is necessary to emphasize that academics primarily characterize the LP concept as being conventional and single-layered. Research shows that such conceptualization is outdated. In following sentences, the hierarchy is explained from the bottom up (i.e., from the individual company to the group of companies). A single company manages its own ComLP, consisting only of the company’s logistics resources. A central company of the SC (usually the manufacturer/an assembly company/wholesaler) in collaboration with suppliers working alongside the SC develops, manages, and operates an SCLP. The central company may have its own LP sources used for logistics activities, or ownership may be divided among SC members. Each company may also have its own ComLP.

We compared the findings of this study’s qualitative and quantitative components, and the overlapping areas are presented in Figure 2. The results of the case studies and the survey confirmed the existence of different fre-

quently mentioned constituents in relation to different areas of LP implementation (Figure 2). Consequently, we can confirm that LPs, applied to different geographic/business areas, significantly differ according to the most frequently mentioned constituents. As such, these findings are consistent with TCE, RBV and SSP theories. Researchers only recently started to explore governance models for ComLP and SCLP. Unlike that, governance models for RLP and CouLP still represent a great opportunity for exploration. We currently know only their most frequently mentioned constituents, namely organized group of stakeholders, the joint interaction portal, and regulations to manage RLPs and CouLPs. Future research needs to include studying logistics and transportation governance models in countries, and regions inside them. Perhaps multinational companies will not become stakeholders in development of regional logistics and transportation formations, but countries and their regions should be to have a control and influence on their incomes, employment of citizens, and environmental impacts.

In this study, from here on, we particularly focus on RLPs. Although regions and countries often place transport infrastructure’s development solely at the forefront of their development plans; that is not the case in countries with a higher LPI (Germany, Denmark, France, and Spain). Logistics services can develop at a faster pace than before based on improved intermodal transport and logistics infrastructure supported by a joint interactive portal supporting promotion and marketing sites, a catalogue of logistic companies and services, electronic auctions, news on traffic jams, accidents, planned works, information on excess capacities, and similar factors. A portal should be developed to facilitate a clear depiction of logistics and transportation developments in the given region. Case studies show that balanced parallel development of the aforementioned factors is of major importance in addition to logistic professionals’ proactive education. The described approach distinguishes leaders from followers. This approach suggests that RLPs require coordinated development of transport infrastructure, logistics infrastructure, and ICT support to regional logistics management and operations, which appear because of regions’ own codified management and coordination mechanisms for the development and operation of their unique logistics systems. Unlike RLPs, ComLPs try to balance characteristics of companies’ private logistics infrastructure, logistics equipment and technology, logistics software and logistics specialists within their walls. In contrast to RLPs and ComLPs, SCLPs try to standardize exchange processes with free logistics software offered to partners, thus indirectly influencing the choice of unified software support, logistics technology, and logistics equipment for partners within the SC.

Case studies have shown numerous advantages of all types of LPs. However, there is no trace of a mass deploy-

ment in practice, especially in the context of countries and regions, even if we research phenomena called by other professional terms within hypernym “logistics platform”. An inhibiting factor we have seen is the absence of codified management and coordination mechanisms for the development and operation of a defined logistics system. Scientific literature most commonly emphasizes the LP concept as a set of systematically pooled constituents. Additionally, practice shows that a set of systematically pooled constituents is a result of the aforementioned mechanism’s healthy functioning. Thus, the research suggests that different types of LPs, including RLP, evolve because of the emergence of mechanisms for managing and coordinating a defined logistics system’s development and operations, which is not well researched.

Based on our research results, we propose the following general definition of LP, which also applies to RLP as sub-type. An LP represents the management and coordination of a particular logistics system’s development and operation and a set of constituents that are systematically pooled because of this system’s operation (Figure 3).

The LP is always part of the logistics system, which

may be divided among a variety of active members, which vary according to LP type. For example, regional logistics system includes following members:

- companies in the role of logistics and transportation service providers;
- users of logistics services;
- regional network connections within the logistics and transport sectors;
- operators of transport infrastructure;
- operators of logistics infrastructure;
- providers of ICT net and related services;
- operators of the innovative supportive environment;
- stakeholders, including local communities;
- public authorities.

Regional logistics service providers that include the formation of an RLP may participate in the following ways:

- as one of RLP’s constituents within a pooled set of constituents;
- as co-creator of the RLP through membership in a regional logistics association;
- as both.

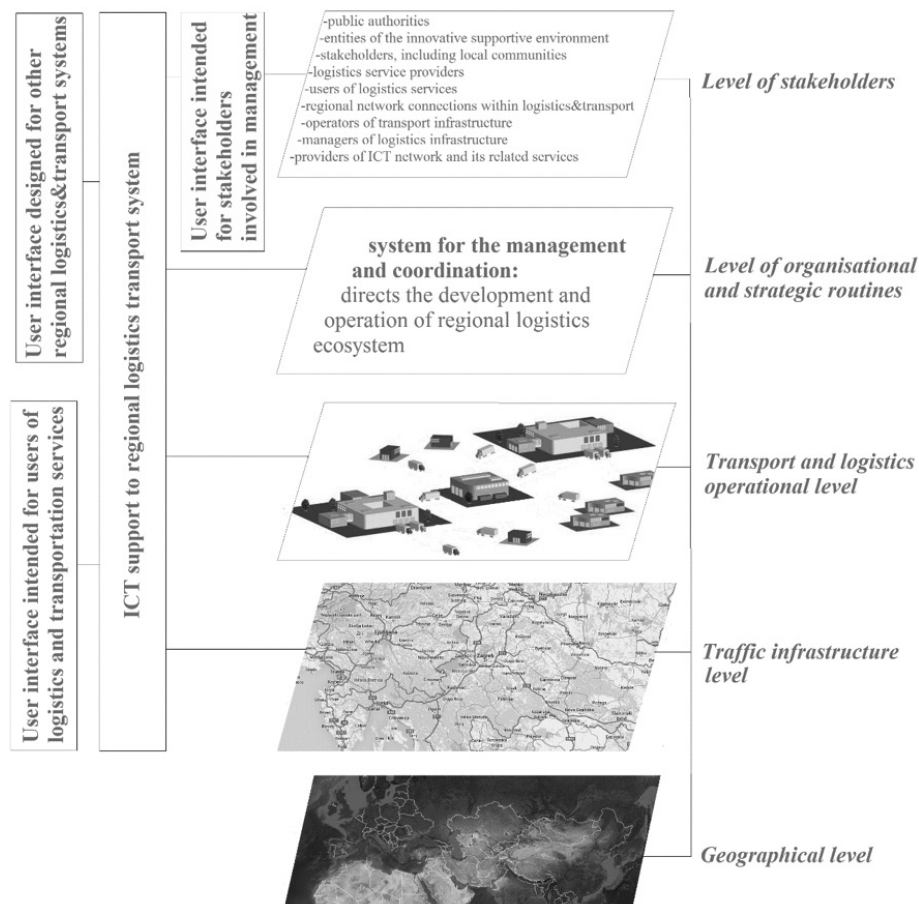


Figure 3: RLP general model

Viewed from a specific region's perspective, logistics service providers operating in surrounding regions may rent their missing constituents and exploit them within their own business LPs on the principle of "hire and distribute," or they may purchase RLP's services, indicating the hierarchical relationship between them.

The main purpose of creating RLPs is to support the efficient and effective implementation of national or regional logistics development strategies, targeting optimal economic and environmental welfare of the region/country. Additional purposes include the following:

- promote the region as a place to carry out effective, innovative and sustainable logistics and transport processes;
- connect all stakeholders interested in logistics and transport;
- continuously detect opportunities and challenges in the fields of logistics and transport;
- promote cooperation in terms of special opportunities and needs;
- comprehensively and professionally support the positioning of transport and logistics infrastructure within the regional geographic area;
- encourage innovation and raise the level of competence in the fields of logistics and transport in the region;
- enable stakeholders to meet to exchange knowledge and experience;
- enable stakeholders to conduct business activities in a modern, innovative and efficient manner.

The main objectives of creating an RLP are economic growth and improved economic competitiveness within the region. Other objectives are the following:

- regional strength and steady economic growth in the logistics and transport sectors;
- increased number of staff employed in the logistics and transport sectors;
- the establishment of IC support for logistics and transport activities in the region;
- reduced CO₂ emissions and increased energy efficiency;
- increased use of renewable energy sources;
- improved business environment indicators;
- increased level of co-modality;
- the joint promotion of logistics and transport within the region.

Members of regional logistics systems invest their time and ideas in all cooperating entities' shared future, in which they anticipate profiting together. All stakeholders can expect to benefit greatly. Some of these anticipated benefits are described below.

Companies acting as logistics service providers can reduce operating costs by using the logistics infrastructure in a public-private partnership, undertaking joint promotion

and marketing activities, using common ICT support, or improving access to infrastructure. By jointly appearing on the market, these companies have a greater possibility of acquiring new customers. Also, companies become more attractive for a wider range of potential customers. They have the opportunity to influence developments in logistics and transportation.

An RLP can help users of logistics services by providing a faster search for more cost-efficient and customizable service providers. They can lower the risk of accidents that could result in damaged cargo, and they can receive services that are more innovative and of higher quality.

Operators of an innovative supportive environment receive primarily indirect financial benefits. They can design more comprehensive regional development programs including not only transport but also logistics content. In the eyes of consumers and the entrepreneurial sector, these operators have a greater impact on promoting competitiveness as well as improving human resource development, quality of life, and sustainable development. RLPs provide an ideal environment for exploiting their full potential, in turn requiring less infrastructure to benefit more businesses.

RLPs are important for local communities that otherwise hardly have a voice while preparing spatial arrangement plans. Logistics and transport sectors are not limited to industrial zones. Trade flows can also significantly affect quality of life. Local communities can participate in policy-making processes, exchange views with experts, and indirectly improve their quality of life.

The crucial and the most important RLP actor is a type of association within the logistics and transport sectors. If logistics service providers are unable to organize themselves at the regional level, the importance and potential of logistics are likely to be overlooked, and logistics issues are excluded from regional development programs. An association under an RLP provides the following: effective knowledge transfers among logistics service providers, greater bargaining power, possibilities for access to different types of public fund subsidizing, most logistics service providers' greater belonging to the logistics sector, realization of synergies, increased motivation for introducing new technologies and innovation, and participation in policy making.

As enablers of industrial initiatives, public authorities are convinced of RLPs' relevance and benefits. In practice, business subjects or operators are not necessarily willing to follow this initiative, even if it is subsidized. However, if willingness exists (usually in the form of a logistics association), then public authorities can achieve strategic regional strategy objectives through an RLP.

RLPs' listed benefits are mainly of a macroeconomic nature, such as a more acceptable carbon footprint, increased competitiveness of enterprises in the region, a faster return on investment in transport infrastructure, a more attractive business environment, and established conditions for creating new jobs with higher added value. Therefore, owners and operators of ComLPs and SCLPs

can expect to receive direct financial benefits at the micro level.

Companies and SCs provide their services in logistically friendly regions and countries around the globe. Logistical friendliness can be linked to RLP's and recently with the European Union's logistics platform. The latter is an attempt of the European Union's logistics specialists to eliminate the disadvantage of hierarchically lower types of LPs, that is, „distinctly local interest“ in a particular narrow geographic/business area (i.e., company, SC, country, region) and to become a means for the European Union's economic growth.

7 Conclusions

This paper's primary goal has been to design an RLP conceptual framework that on a theoretical level links different views of LPs. As such, it assists not only researchers in creating new organizational models but also regional authorities in achieving regional economic growth. We compared characteristics of LPs' theoretical concepts with examples taken from practice to gain an understanding of how the LP term has been employed by mostly European stakeholders. Specifically, we focused on the types of constituents and geographic/business areas that LPs cover.

First, we studied academic definitions surrounding logistics and non-logistics platforms, anticipating that the concept of an LP would be realized as one of the following:

- one or more principles/resources/constituents or their combination;
- prerequisite for the continuation of activities (e.g., contract, financial input, letter of intent, project documentation, order);
- surface area (i.e., traffic route, parking lot);
- system (warehouse as a black box with all movable and immovable assets, personnel, IT support, etc.);
- any combination of the previous options that are needed for designing/planning/implementing/controlling logistics processes or logistics activities.

In addition to an LP's specific description, a detailed description of its constituents and area must be considered. We considered 12 such constituents: logistics infrastructure, logistics technological equipment, logistics technology, logistics experts, transport infrastructure, ICT, joint interactive portal, regulations, business environment, geographical location, organized group of companies, and logistics companies. We also considered four geographic/business areas: company, supply chain, country, and region. According to this result, four subtypes of LP had been proposed, namely ComLP, SCLP, CouLP and RLP.

We noted two views of the LP concept that results in differing definitions. One group of authors views LPs as necessary parts of a larger whole (i.e., one logistics cen-

tre for all distribution activities). Another group of authors understands LP as a base for various constituents that may not all be engaged in all activities (i.e., customized services); however, they are all compatible.

We cannot determine, which of the 12 proposed constituents are not parts of an LP within a specific geographic/business area. However, we can predict which constituents are of greater importance for an LP within a specific geographic/business area. More frequent discussion means greater perceived importance of such activities like planning and colluding.

We proposed a general definition of an LP, its subtypes, a general model of an RLP, and RLPs' goals and benefits for stakeholders. As a result of our research, it is possible to classify existing LPs and to create new LPs according to a given strategy, strategic objectives, desired benefits and covered geographic/business areas.

The secret of a successfully developing a logistics region lies in its ability to develop a mechanism for the managing and coordinating a particular logistics system's development and operation, an area that should be further researched. Due to the system's operations, a set of pooled constituents occurs spontaneously. Before this mechanism's occurrence, logistics service providers may need years to organize themselves within a kind of association that can participate in policy development processes. They must not only outgrow the phase in which they view each other as mere competitors, but also find a common interest and expand the scope of their synergic operations. The LP concept is a proven, multi-level phenomenon that should be further explored as a mechanism for co-opetition and collaborative consumption.

We propose more frequent operationalization of new institutional economics and social network theories as the basis to examine the integration of regional logistics and transportation stakeholders based on the proven links between constituents and LP types. In closing, RLPs as a type of LP are essential for maximizing regional earnings via performing logistics and transport activities, preservation of the environment and activation of regional resources.

References

- Abrahamsson, M., Aldin, N. & Stahre, F. (2003). Logistics Platforms for Improved Strategic Flexibility. *International Journal of Logistics: Research and Applications*, 6(3), 85-106, <http://dx.doi.org/10.1080/1367556031000123061>
- Almotairi, B. (2012). *Integrated Logistics Platform – The context of the port relational exchanges and systematic integration*. Göteborg: Department of Technology Management and Economics and Chalmers University of Technology.
- Antón, J.P. & Alarcón, R. (2014). Bases for feasibility analysis of Logistics Platforms at borders. *Procedia* -

- Social and Behavioral Sciences*, 162, 6–14, <http://dx.doi.org/10.1016/j.sbspro.2014.12.180>
- Arvis, J.F., Saslavsky, D., Ojala, L., Shepherd, B., Busch, C. & Raj, A. (2014). *Connecting to Compete 2014 – Trade Logistics in the Global Economy – The Logistics Performance Index and Its Indicators*. Washington: The World Bank.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120.
- Bergqvist, R. & Monios, J. (2014). The role of contracts in achieving effective governance of intermodal terminals. *World Review of Intermodal Transportation Research*, 5(1), 18–38, <http://dx.doi.org/10.1504/WR-ITR.2014.065040>
- Blatter, J. (2003). Beyond Hierarchies and Networks: Institutional Logics and Change in Transboundary Spaces. *Governance*, 16, 503–526, <http://dx.doi.org/10.1111/1468-0491.00226>
- Bolumole, Y.A., Closs, D.J. & Rodammer, F.A. (2015). The Economic Development Role of Regional Logistics Hubs: A Cross-Country Study of Interorganizational Governance Models. *Journal of Business Logistics*, 36, 182–198, <http://dx.doi.org/10.1111/jbl.12088>
- Bonev, M., Wörösch, M. & Hvam, L. (2015). Utilizing platforms in industrialized construction. *Construction Innovation*, 15(1), 84–106, <http://dx.doi.org/10.1108/CI-04-2014-0023>
- Cambra-Fierro, J. & Ruiz-Benitez, R. (2009). Advantages of intermodal logistics platforms: insights from a Spanish platform. *Supply Chain Management: An International Journal*, 14(6), 418–421, <http://dx.doi.org/10.1108/13598540910995183>
- Chen, H., Daugherty, P.J. & Landry, T.D. (2009). Supply Chain Integration: A Theoretical Framework. *Journal of Business Logistics*, 30(2), 27–46, <http://dx.doi.org/10.1002/j.2158-1592.2009.tb00110.x>
- Chikan, A. (2001). Integration of production and logistics — in principle, in practice and in education. *International Journal of Production Economics*, 69(2), 129–140, [http://dx.doi.org/10.1016/S0925-5273\(99\)00102-4](http://dx.doi.org/10.1016/S0925-5273(99)00102-4)
- Christopher, M. & Towill, D.R. (2002). Developing market specific supply chain strategies. *The International Journal of Logistics Management*, 13(1), 1–14, <http://dx.doi.org/10.1108/09574090210806324>
- Clifford Defee, C. & Stank, T.P. (2005). Applying the strategy-structure-performance paradigm to the supply chain environment. *The International Journal of Logistics Management*, 16(1), 28–50, <https://doi.org/10.1108/09574090510617349>
- Closs, D.J., Bolumole, Y.A. & Rodammer, F. (2014). Supply Chain Management Opportunities for Regional Economic Development. *Transportation Journal*, 53(4), 453–98, <http://dx.doi.org/10.1353/tnp.2014.0025>
- Coase, R.H. (1937). The nature of the firm. *Economica*, 4(16), 386–405.
- De Carvalho, C.C., De Carvalho, M.F.H. & Lima, O.F.Jr. (2010). Efficient Logistic Platform Design: The Case of Campinas Platform. Paper presented at the XVI International Conference on Industrial Engineering and Operations Management, São Carlos, SP, Brasil, October 12–15.
- De Souza, F.M., Da Silva Costa, W.A. & Gobbo Junior, J.A. (2007). Logistic platforms: Proposal of an implementation methodology. Paper presented at the POMS 18th Annual Conference, Dallas, Texas, U.S.A., May 4–7.
- Del'olmo, P. & Lulli, G. (2004). Planning Activities in a Network of Logistics Platforms with Shared Resources. *Annals of Operations Research*, 129(1–4), 155–169, <http://dx.doi.org/10.1023/B:ANOR.0000030686.79587.60>
- Du, J. & Bergqvist, R. (2010). Developing a conceptual framework of international logistics centres. Paper presented at the 12th WCTR, Lisbon, Portugal, July 11–15.
- Dubke, A.F., Ferreira, F.R.N. & Pizzolato, N.D. (2006). Plataformas Logísticas: Características e tendências para o Brasil. Paper presented at the XXIV ENEGEPE, Florianópolis, SC, Brasil, November 3–5.
- Dyer, J.H. & Singh, H. (1998). The relational view: Cooperative strategy and sources of interorganizational competitive advantage. *Academy of Management Review*, 23(4), 660–679, <https://doi.org/10.5465/AMR.1998.1255632>
- Ellram, L.M. (1996). The use of the case study method in logistics research. *Journal of Business Logistics*, 17(2), 93–138.
- European Commission (2015). Fact-finding Studies in Support of the Development of an EU Strategy for Freight Transport Logistics. Lot 1: Analysis of the EU Logistics Sector - Final Report. <http://ec.europa.eu/transport/themes/strategies/studies/doc/2015-01-freight-logistics-lot1-logistics-sector.pdf>
- European logistics platform (2015). Our Mission. <http://www.european-logistics-platform.eu/>
- Field, A. (2005). *Discovering statistics using SPSS*, 2nd ed. London: SAGE Publications.
- Francetech (2001). France - The country of choice for logistics. http://archives.entreprises.gouv.fr/2012/www.industrie.gouv.fr/biblioth/docu/dossiers/sect/pdf/logistic_broch_gb.pdf
- Gattuso, D. & Cassone, G.C. (2012). Micro-simulation model supporting the management of an interregional logistics platform. *Procedia – Social and Behavioral Sciences*, 54, 557–566, <http://dx.doi.org/10.1016/j.sbspro.2012.09.773>
- Gajšek B. & Grzybowska K. (2013). A cross-county contextual comparison of the understanding of the term 'logistics platform' in practice. *Research in Logistics & Production*, 3(2), 85–108.

- Gajšek, B. & Rosi, B. (2015). Stakeholder differences in the understanding of inter-organizational concept content as a risk factor: The case for a logistics platform. *International Journal of Logistics Management*, 26(1), 107-127. <https://doi.org/10.1108/IJLM-06-2012-0040>
- Golicic, S.L., Davis, D.F. & McCarthy, T.M. (2005). *Research methodologies in supply chain management*. In: Kotzab, H., Seuring, R., Müller, M., Reiner, G., (Eds.). *Research methodologies in supply chain management*. Germany: Physica-Verlag.
- Grzybowska K. & Gajšek B. (2016). *Supply Chain Logistics Platform as a Supply Chain Coordination Support*. In: Bajo, J., Escalona, M.J., Giroux, S., Hoffa-Dąbrowska, P., Julián, V., Novais, P., Sánchez-Pi, N., Unland, R., Azambuja Silveira, R. (Eds.). *Highlights of Practical Applications of Scalable Multi-Agent Systems*. The PAAMS Collection. Germany: Springer, https://doi.org/10.1007/978-3-319-39387-2_6
- Guyon, O., Absi, N., Feillet, D. & Garaix, T. (2012). A modeling approach for locating logistics platforms for fast parcels delivery in urban areas. *Procedia – Social and Behavioral Sciences*, 39, 360-368, <http://dx.doi.org/10.1016/j.sbspro.2012.03.114>
- Jennings, B. & Holcomb, M. (1996). Beyond Containerization: The Broader Concept of Intermodalism. *Transportation Journal*, 35(3), 5-13, <http://www.jstor.org/stable/20713275>
- Johannsen, H.H.W. & Kristiansen, J. (2007). *Analysis of institutional and organisational solutions in the development of transport and logistics centres – based on illustrative examples*. Denmark: Aalborg University.
- Kille, C., Schwemmer, M. & Reichenauer, C. (2015). *TOP 100 in European Transport and Logistics Services 2015/2016*. Hamburg: DVV Media Group.
- Kinnear, E. (1997). Is there any magic in cross-docking? *Supply Chain Management: An International Journal*, 2(2), 49-52, <http://dx.doi.org/10.1108/13598549710166096>
- Lăpăduși, M.L. & Căruntu, C. (2011). The role and the importance of the logistics platforms in internal and international transport. *Annals of the Constantin Brâncuși University of Târgu Jiu, Economy Series*, 3, 205-209.
- Lavie, D. (2006). The competitive advantage of interconnected firms: an extension of the resource based view. *Academy of Management Review*, 31(3), 638-58, <http://www.jstor.org/stable/20159233>
- Leal, E. & Pérez Salas, G. (2009). Logistic platforms: conceptual elements and the role of the public sector. *Bulletin FAL*, 274(6), 1-9. http://repositorio.cepal.org/bitstream/handle/11362/36237/FAL_274_Logistic_Plataforms.pdf?sequence=1
- Lieb, R. & Bentz, B.A. (2005). The North American third party logistics industry in 2004: the provider CEO perspective. *International Journal of Physical Distribution & Logistics Management*, 35(8), 595-611, <http://dx.doi.org/10.1108/09600030510623357>
- Li-Ekenstedt, L. (2004). *Decision Processes and Determinants of Logistics Facility Locations - Multinational Corporations' Perspectives*. Göteborg: School of Business, Economics and Law, Göteborg University.
- Lima, O.F., Rutkowski, E.W., De Carvalho, C.C. & Lima, J.C.F. (2010). Sustainable Logistics Platform in a Regional Brazilian Airport. *The International Journal of Sustainable Development and Planning*, 2(5), 163-174, <http://dx.doi.org/10.2495/SDP-V5-N2-163-174>
- Lin, C.Y. & Ho., Y.H. (2009). RFID technology adoption and supply chain performance: an empirical study in China's logistics industry. *Supply Chain Management: An International Journal*, 14(5), 369-378, <http://dx.doi.org/10.1108/13598540910980288>
- Lin, Y., Luo, J. & Zhou., L. (2010). Modular logistics service platform. Paper presented at the IEEE International Conference on Service Operations, Logistics, and Informatics (SOLI), Qingdao, Shandong, July 15-17, <http://dx.doi.org/10.1109/SOLI.2010.5551582>
- Liedtke, G. & Murillo, D.G.C (2012). Assessment of policy strategies to develop intermodal services: The case of inland terminals in Germany. *Transport Policy*, 24, 168-178, <https://doi.org/10.1016/j.tranpol.2012.06.002>
- Mangan, J. & Lalwani, C. (2008). Port-centric logistics. *The International Journal of Logistics Management*, 19(1), 29-41, <http://dx.doi.org/10.1108/09574090810872587>
- Marasco, A. (2007). Third-party logistics: A literature review. *International Journal of Production Economics*, 113(1), 127-147, <http://dx.doi.org/10.1016/j.ijpe.2007.05.017>
- Marolt, M., Lenart, G., Maletič, D., Kljajić Borštnar, M. & Pucihar, A. (2016). Business Model Innovation: Insights from a Multiple Case Study of Slovenian SMEs. *Organizacija*, 49(3), 161-171, <http://dx.doi.org/10.1515/orga-2016-0015>
- Meidute, I. (2005). Comparative Analysis of the Definitions of Logistics Centres. *Transport*, 20(3), 106-110, <http://dx.doi.org/10.1080/16484142.2005.9638005>
- Miles, R. E., Snow, C. C., Meyer, A. D. & Coleman, H. J. (1978). Organizational strategy, structure, and process. *Academy of Management Review*, 3(3), 546-562, <http://www.jstor.org/stable/257544>
- Monios, J. (2015). Integrating intermodal transport with logistics: a case study of the UK retail sector. *Transportation Planning and Technology*, 38(3), 347-374, <http://dx.doi.org/10.1080/03081060.2015.1008798>
- Monios, J. & Wilmsmeier, G. (2013). The role of intermodal transport in port regionalisation. *Transport Policy*, 30, 161-172, <http://dx.doi.org/10.1016/j.tranpol.2013.09.010>
- Mozart da Silva, R., Senna, E.T.P. & Senna, L.A.S. (2014). Governance of logistics platforms: The use of a survey for building a framework of performance indicators. *African Journal of Business Management*, 8(10), 350-365, <http://dx.doi.org/10.5897/AJBM2014.7360>
- Nguyen, H. O. & Tongzon, J. (2010). Causal nexus be-

- tween the transport and logistics sector and trade: The case of Australia. *Transport policy*, 17(3), 135-146, <https://doi.org/10.1016/j.tranpol.2009.12.005>
- Nunez-Carballosa, A. & Guitart-Tarres, L. (2011). Third-party logistics providers in Spain. *Industrial Management & Data Systems*, 111(8), 1156-1172, <http://dx.doi.org/10.1108/02635571111170749>
- Pekkarinen, S. & Ulkuniemi, P. (2008). Modularity in developing business services by platform approach. *The International Journal of Logistics Management*, 19(1), 84-103, <http://dx.doi.org/10.1108/09574090810872613>
- Perez-Franco, R., Phadnis, S., Caplice, C. & Sheffi, Y. (2016). Rethinking supply chain strategy as a conceptual system. *International Journal of Production Economics*, 182, 384-396, <http://dx.doi.org/10.1016/j.ijpe.2016.09.012>
- Peters, N.J., Hofstetter, J.S. & Hoffmann, V.H. (2011). Institutional entrepreneurship capabilities for interorganizational sustainable supply chain strategies. *International Journal of Logistics Management*, 22(1), 52-86, <https://doi.org/10.1108/09574091111127552>
- Pfohl, H.C. & Gareis, K. (2005). Supplier parks in the German automotive industry. *International Journal of Physical Distribution & Logistics Management*, 35(5), 302-317, <http://dx.doi.org/10.1108/09600030510607319>
- Rutner, S.M., Aviles, M. & Cox, S. (2012). Logistics Evolution: a Comparison of Military and Commercial Logistics Thought. *The International Journal of Logistics Management*, 23(1), 96-118, <http://dx.doi.org/10.1108/09574091211226948>
- Sainza, R., Bañosb, J., Valc, S. & Samir, J. (2013). The economic impact of logistics infrastructure: the case of PLAZA – the Zaragoza Logistics Platform. *Transportation Planning and Technology*, 36(4), 299-318, <http://dx.doi.org/10.1080/03081060.2013.798480>
- Sanchez, O. & Villalobos, J.R. (2007). Design of a Logistics Platform for the Distribution of Fresh Produce. Paper presented at the Informs Annual Meeting, Seattle, WA, November 4-7.
- Schmitz, H. & Nadvi, K. (1999). Clustering and Industrialization: Introduction. *World Development*, 27, 1503-14.
- Schmoltzi, C. & Wallenburg, C.M. (2011). Horizontal cooperations between logistics service providers: motives, structure, performance. *International Journal of Physical Distribution & Logistics Management*, 41(6), 552-576, <https://doi.org/10.1108/09600031111147817>
- Schwemmer, M. (2016). *Die TOP 100 der Logistik*. Hamburg: DVV Media Group.
- Sprague, C. & Woolman, S. (2011). VidaGas: delivering better health to Northern Mozambique with LPG. *Journal of Enterprising Communities: People and Places in the Global Economy*, 5(1), 41-57, <http://dx.doi.org/10.1108/17506201111119590>
- Stevens, G.C. & Johnson, M. (2016). Integrating the Supply Chain ... 25 years on. *International Journal of Physical Distribution & Logistics Management*, 46(1), 19-42, <http://dx.doi.org/10.1108/IJPDLM-07-2015-0175>
- Swiss Logistics Platform (2015). The Swiss Logistics Platform branch conspectus since 1999. <http://www.logistikplattform.ch/wcms/logi.cfm/h,20/s,0/c,0/sc,en/blue.htm>
- Tušar, M., Žnidaršič, A. & Miglič, G. (2016). Differences Between National Cultures Matter – Case of Slovenian-Korean Working Environment. *Organizacija*, 49(3), 183-193, <http://dx.doi.org/10.1515/orga-2016-0017>
- Vánca, J., Egri, P. & Karnok, D. (2010). Planning in concert: A logistics platform for production networks. *International Journal of Computer Integrated Manufacturing*, 23(4), 297-307, <http://dx.doi.org/10.1080/09511921003630092>
- Villa, A. (2001). Introducing some Supply Chain Management problems. *International Journal of Production Economics*, 73, 1-4, [http://dx.doi.org/10.1016/S0925-5273\(01\)00090-1](http://dx.doi.org/10.1016/S0925-5273(01)00090-1)
- Vogt, J.J. (2010). The Successful Cross-Duck Based Supply Chain. *Journal of Business Logistics*, 31(1), 99-119, [http://dx.doi.org/10.1002/\(ISSN\)2158-1592](http://dx.doi.org/10.1002/(ISSN)2158-1592)
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171-180, <http://dx.doi.org/10.1002/smj.4250050207>
- Williamson, O.E. (1975). *Markets and Hierarchies: Analysis and Antitrust Implications*. New York: The Free Press.

Brigita Gajšek is an Assistant Professor at Faculty of Logistics, University of Maribor. Her research interest includes processes, organization and technologies in intra-logistic.

Jure Kovač is a Professor of Organization and Management at Faculty of Organizational Sciences, University of Maribor. His research interests are organization theory, organization design and management development.

Major **Benjamin T. Hazen**, PhD is an Assistant Professor of Logistics and Supply Chain Management in the Department of Operational Sciences at the Air Force Institute of Technology. He is also a Faculty Affiliate of the Department of Marketing and Supply Chain Management at the University of Tennessee. He has published more than 50 peer-reviewed articles in leading journals.

Organizacijska zasnova logistične platforme in njenih podvrst za logistično privlačnejše regije

Ozadje in namen: Trajnostna gospodarska rast regije, ki temelji na logistiki, zahteva usklajen razvoj infrastrukture, informacijske in komunikacijske tehnologije ter proaktivno izobraževanje logističnih strokovnjakov. Cilj je dosegljiv z regionalnimi logističnimi platformami (RLP-ji), kot podvrstami logističnih platform. Pričujoča raziskava razvija teoretični model logistične platforme in njene podvrste RLP, ki ga sestavljajo (1) osnovni gradniki, (2) področje izvajanja in (3) koristi vključenih deležnikov ter operativne koristi.

Oblikovanje/metodologija/pristop: K raziskavi se je pristopilo na uravnotežen način, s kvalitativnim in s kvantitativnim pristopom. Preučili smo več primerov dobre prakse in izvedlo se je anketiranje.

Rezultati: Sistematično preučevanje primerov dobre prakse je identificiralo 12 “zelo pogosto” izpostavljenih gradnikov logistične platforme in tri področja implementacije, kar je bilo dodatno potrjeno še z anketiranjem. Razvoj RLP, kot podvrste logistične platforme, se začne spontano z oblikovanjem skupine zainteresiranih deležnikov, ki imajo jasno vizijo in zagonsko energijo za preboj. Prispevek predlaga teoretični model RLP.

Zaključek: Skrivnost razvoja uspešne logistične regije je v njeni sposobnosti razvoja mehanizma upravljanja in koordinacije usmerjenega razvoja in delovanja regionalnega logističnega sistema. Raziskava daje bogat vpogled v mnoge vidike logistične platforme in RLP, kar je koristno za regionalne organe in poslovne subjekte, ki želijo stimulirati regionalno ekonomsko rast.

Ključne besede: *logistična platforma; organizacijska struktura; mreženje; vlada, regionalizacija; transport*

DOI: 10.2478/orga-2018-0003

Evaluation of the Influence of the Macro-environment on the Social Innovation Activity of Enterprises

Liliya SATALKINA, Nestor SHPAK

Lviv Polytechnic National University, Lviv, Ukraine,
liliya.o.satalkina@lpnu.ua (corresponding author)

Background: Nowadays the emphasis on social components in the general mainstream of innovation activity is one of the strongest grounds for the successful functioning and development of enterprises. In several countries, social innovation activity is becoming a product of business in general, with associated expectations regarding profit.

Objectives: The goal of the article is to develop a toolkit for the evaluation of the influence of the macro-environment on the social innovation activity (SIA) of enterprises.

Method: The methodology includes elements of theoretical and empirical research with the implementation of methods such as a literature review, all types of analysis, and methods of aggregation and integration. Questionnaires were used as a means of data collection.

Results: The general methodological framework of diagnostics of the SIA macro-environment is distinguished. Based on a theoretical analysis of the SIA ecosystem and the experience of operating enterprises, the main factors of SIA macro-environment are determined. The general integrated index and its five-level interpretational model are proposed as a measure for the evaluation of the SIA macro-environment.

Conclusion: The results presented provide data necessary for the argumentation of SIA strategy and tactics, as well as investment policy in this sphere.

Keywords: *enterprise; social innovation activity; diagnostics; macro-environment; factors*

1 Introduction

For a significant period of time, the innovation activity of enterprises has been considered the basis of a competitive economy. Conducting innovative activity in the production enterprises is the basic condition in the struggling for the competitive position (Ślusarczyk & Kot 2016) and innovations are an important tool for increasing competitiveness of companies (Lendel et al. 2015). Together with the concept of corporate social responsibility it is perceived as a competitive advantage (Válová & Formánková 2014). However, today's economic environment is extremely dynamic - for this reason, innovation activity also gets new emphasis. Hence, the innovation strategy of today's enterprises should be oriented not only towards financial results but also upon the outcomes that it brings to society.

Typical example of such an innovative orientation of enterprise is implementation of environmental responsibility (Moravcikova et al. 2017). The growing role of social innovations is proved by current research which shows that social innovations rose to over £40 billion in 2015 (a £10 billion increase compared to 2014), giving impetus to the development of investment funds and attracting additional private capital. During the period of 2012-2015, the increase in the level of employment and turnover of socially innovative enterprises was approximately 11% (HM Government Report 2016; JP Morgan and GIIN 2015; Vaccaro 2014; Ethex 2015). Thus, it is clear that social innovation activity determines new possibilities in the qualitative development of the economy. Considering it as a tool in the transformation of the economy to a new level, it is important to note that one of the main elements in the general ecosystem of social innovations is enterprises. The reason

for this is that it forms the main linkage between government, non-profit organizations and society. Therefore the increase in the development of enterprise SIA may provide not only economic benefits for enterprise itself, but also positive social outcomes for business activity. According to Formánková et. al (2016), social responsibility may only be duly carried out and implemented in the organization activities on condition of favourable approach of the management understanding the need for its development.

It is worth noting that SIA is mostly correlated with social enterprise. Determining the enterprise as the main object of our research, we undertook a brief overview of existing approaches that have two general positions in terms of an understanding of “social enterprise”. On one hand, certain scientists consider it as an organization that takes the initiative to identify and address important social problems in their activity (OECD 2010; Corner & Ho 2010; Maclean et. al. 2012). On the other hand, there is a school of thought that “social enterprise” is the organizational model, that being chosen to solve a particular social problem focuses on achieving both economic and social value objectives (e.g. employing market-based strategies that accomplish social or environmental missions and can provide goods or services) (Landabaso & Liesbet 2013; Volynets 2015; Gidron 2014; Harji et al. 2014; Hardi et al. 2013; Vveinhardt et al. 2014). This approach is also proved through consideration of the economic benefits of investing in social innovations (Porter 2003; Brest 2013; Etzel 2015). Usually these benefits are not only distinguished for enterprises, but for investors as well. It is widely known that although investors may have different incentives for social innovation, more than 59% of them look for market rate return (GIIN 2015). Social businesses focusing on social goals make profit that is usually reinvested, either fully or partially, into the company. It is necessary to point out that we share the position of existing research which supports the dual character of social enterprise: the equalization of economic and social purposes and attention paid to societal outcomes.

Nevertheless, considering the popularization and spread of social innovations, as well as their impact upon the strategy of enterprise development, it is important to know how to measure the level of this activity and the impact thereof, as well as how to indicate its prospects and risks. This can give grounds for relevant strategy and tactics in terms of the appropriate development of social innovation activity. In addition, such measurement should be complex and include the following elements: an evaluation and analysis of the current state and effectiveness, the determination of problematic and prospective points, and the formation of conclusions and plans for further steps. The analysis in this sphere may be provided by the diagnostics of social innovation activity which will allow one to evaluate its effectiveness from the point of view of different dimensions. In addition, support for investment is

essential for social innovations, as with any other type of innovation activity. Therefore, the diagnostics of SIA that can determine its state, effectiveness, problems and prospects can give grounds for rational investment decisions.

Diagnostics in general is a process of the complex evaluation of the state of the object and an analysis of its tendencies, designed for the determination of the existing problems or positive aspects, and the development of further recommendations. Thus, the key elements in the mechanism of SIA diagnostics should correspond to the main principles of diagnostics in general. Compared to simple evaluation and measurement, diagnostics has several advantages, determined by four key features:

It has a complex character and provides a comprehensive analysis of SIA based on distinct metrics and indicators.

It previews the formation of analytical conclusions about the state of SIA as well as any indication of main positive or negative tendencies which led to such a state. As a result, it determines the problems and prospects of SIA.

On the basis of such a complex analytical approach, it allows one to form recommendations for further SIA development within the context of the determined problems or prospects.

It requires a certain toolkit in order to provide complex evaluation, analysis, interpretation of the results, and the formation of recommendations.

The framework for SIA diagnostics is based on certain metrics, the evaluation of which can form a basis for distinct analytical conclusions. Hoelscher, Bund and Mildemberger (2015) proposed an approach within which such metrics are formed, the so-called “analytical level”. This is connected to six stages of the social innovation activity process (The Young Foundation 2012): 1) prompts resulting from a social need; 2) the actual starting point of the process, i.e. the generation of ideas designed to solve the need; 3) prototyping of the ideas; 4) sustaining a promising prototype; 5) scaling; 6) systemic change.

Nevertheless, as the diagnostics are themselves complex, this should be based not only on an analysis of those metrics that reflect the functional side or peculiar characteristics of social innovations. It should also include the diagnostics of an environment in which enterprise undertakes its social innovation activity. In this case, the environment itself should be considered from the macro- and micro- level.

In this article, we will focus upon the diagnostics of the macro-environment of enterprise SIA. Hence, the overall aim is to derive the methodical groundings for the diagnostics of the SIA macro-environment, based on the following: 1) development of interpretational metrics and indicators; 2) determination of the method of analysis itself; 3) interpretation of the results obtained. This part will refer to the first step in a complex multi-staged diagnostics of SIA.

The diagnostics of the macro-environment may achieve the following: determining the main prospects and risks of SIA realization; analyzing the effectiveness of the SIA of enterprises under the influence of the macro-environment; and evaluating the level of influence of the macro-environment on SIA. Implementing such diagnostics allows us to analyze those factors, which, not being under the control of enterprises, are still defining for further strategy in SIA.

2 Theoretical background

A review of the literature reveals that the concept of SIA diagnostics has not been investigated to this point. The majority of research refers to the question of social innovation evaluation, which is a much narrower concept. Bund et al. (2013) propose methods of measuring the social impact of innovation activity. Hardi et al. (2012) consider the CSR Index as a tool that can help to measure, manage and integrate responsible business practice. Nevertheless, they indicate the absence of a method that could allow for the measurement of the impact of social initiatives on the companies themselves, particularly their economic results. Castro Spila et al. (2016) developed a regional and organizational approach in measuring the capacity of social innovations, considering the interrelations between the context and dynamics of social innovation.

Nevertheless, evaluation and measurement is only part of the general process of diagnostics. Logically it takes place within the first step of the methodological model and may be based on relevant metrics and indicators. The Organization for Economic Co-operation and Development (OECD), on its Innovation Policy Platform¹, concludes that the metrics of innovation should include different dimensions of innovation (the degree of novelty; the type of innovation; the impacts; the source of innovation; socio-economic performance), as well as a range of factors that are considered as determinants for innovation (determined by the firm, industry, region and country levels). In the context of the stated approach, it is worth noting that the range of factors may characterize the macro-environment for SIA.

An analysis of the influence that macro-environment has on the SIA of enterprises should start with an understanding of the main directions. Hoelscher et al. (2015) proposed the following general dimensions of innovation metrics for social innovation activity:

- Knowledge (graduation rates at doctorate level, science/engineering graduates at doctorate level etc.);
- Innovation culture (popular attitudes towards scientific advancements etc.);
- Information or communication technology;
- Financial resources (business and enterprise expenditures, government funding etc.);

- Entrepreneurial activity collaboration (firms with (inter)national collaboration on innovation, cooperation on scientific articles etc.);
- Intellectual property rights and patents.

At the same time, according to the deliverables of the TEPSIE project, the evaluation of SIA is based on the dimensions and variables of different framework sublevels within three main groups (Bund et al., 2013):

1. General conditions:
 - Resources framework – financial resources, human resources, infrastructural resources;
 - Institutional framework – normative institutions, regulative institutions, cultural cognitive institutions;
 - Political framework – policy awareness of social innovation, political environment;
 - Societal and climate framework – social needs and demands, social engagement and attitudes;
2. Entrepreneurial activity:
 - Investment start-up collaboration – expenditure on innovation by the social economy, start-ups dedicated to social purposes, the appropriate environment for starting a company;
3. Societal outcome and output:
 - Education, health-care, employment – equal opportunities, quality of health facilities, earnings, social cohesion, preservation of natural capital.

The authors also analyze the possible metrics for the evaluation for each of the determined dimensions. For example, for the first group, the following indicators are the most relevant: the share of expenditure as a percentage of GDP; public social expenditure; private social expenditure as a percentage of GDP; citizens' attitudes towards entrepreneurship; memberships in civil society; organizations, political participation etc. In terms of entrepreneurial activity, the indicators are as follows: expenditure on innovation activities by firm size; early-stage social entrepreneurship as a percentage of the working population; enterprise death rate; days necessary to start a business etc. For the third group, the following metrics are indicated: educational attainment; the percentage of people aged 25 to 64 with at least upper-secondary education; share of foreign students etc. (Krlev, Bund & Mildemberger 2014). However, these metrics only work within the evaluation of social innovation activity on a national level. In other words, by using these metrics, it is possible to evaluate how the implementation of social innovations influences the national economy and society – the macro-environment. But these metrics do not allow one to analyze how the macro-environment influences the development of SIA. They cannot be used for the analysis of SIA development at the initial stage of the process (on the enterprise level) with reference

¹ Available at <https://www.innovationpolicyplatform.org/>

to the following: the conditions of enterprise SIA development (particularly in macro-environment); the relevant strategy of enterprise SIA within the determined conditions; key points during investment in SIA projects. The influence of the macro-environment on SIA is determined by those factors that form the relevant environmental dimensions; thus, the diagnostics of the macro-environment should include metrics of these dimensions. Antadze and Westley (2012) analyze methods of SIA estimation and propose measurement tools - and the limitations thereof - for the evaluation of social impact. In the authors' opinion, each of these methods used separately do not allow for a complete evaluation of the social and economic effect of social innovations; to that end, they propose to combine them into two groups:

1. *With single (economic) focus*: innovation index; cost-effectiveness analysis; stated preferences; revealed preferences; public value assessment; life satisfaction assessment;
2. *With multiple focus*: value-added assessment; government accounting measurement; social impact or social return on investment; quality-adjusted life etc.

Nevertheless, these methods, whether taken separately or even in combination, do not completely reflect the peculiarities of social innovations within entrepreneurial activity.

Patton (2011) proposed the concept of developmental evaluation of social innovations that covers five main tasks:

1. Adapting a social innovation that can be implemented in a project or program to conditions of complex dynamic systems.
2. Adapting effective general principles to a new context of ideas for social innovation.
3. Developing the ability to respond rapidly to different kinds of sudden changes or crises.
4. Development of the scalability of innovation, in order to adapt it to traditional formative and summative evaluation.
5. Major systems change and cross-scale developmental evaluation that, taking innovation to scale, can determine how an innovation is or may need to be changed and adapted to have a broader impact.

In the report "Strengthening social innovation in Europe", the metrics to support investment decisions on social innovations are determined (Reeder & O' Sullivan 2012). According to this approach, an evaluation of social innovation and following investment decision should be based on the following: strategic fit; outcomes; and efficiency. Each of these points has relevant metrics, based on which the evaluation should be completed. Thus, according to the approach, within the category of *strategic fit* the metrics should give an understanding of how the project matches its goals; if the project can have a positive effect on

other projects; and whether the project is characterized by a reasonable combination of risk and return. Within the category of *outcomes*, the general framework concerns the following: inputs, outputs and outcomes for the individual and for society. The metrics in *efficiency* should indicate how to calculate savings as a percentage of initial costs or inputs, and how to evaluate rates of return on the initial investment.

Within a strategy for scaling social innovations, four main steps can be indicated (Madeleine 2014): 1) goals for scaling; 2) objects of scaling; 3) main directions of scaling; 4) a mechanism for scaling. These stages partly determine the main steps in complex diagnostics of social innovation activity.

A review and analysis of existing research shows that the aspect of SIA on the level of enterprises has been underinvestigated to date. This increases the importance for the development of a multi-staged diagnostics framework for enterprise SIA that will provide a precondition for the relevant investment decision and the further development of SIA, based on a complex analysis of the environment.

3 Method

We consider the diagnostics of the SIA macro-environment as part of the general process of diagnostics, which includes three main steps: 1) interpretational metrics and indicators; 2) method of analysis; 3) interpretation of the obtained results. The place held by SIA macro-environment diagnostics in the general process is represented on Figure 1.

The logical structure of the article is divided into theoretical and empirical parts. Primarily, based on the results obtained in previous research, we have used the developed term "social innovation activity of enterprises" (Shpak et al. 2017). Analyzing the ecosystem of SIA in three countries which differ by geographical location and level of economic development, we formed groups of macro-environmental factors. In the empirical section, we have formed a framework for an expert evaluation of the SIA macro-environment. Concerning the experience of practicing enterprises, we determined the weighting factors for each factor group. At this stage, questionnaires with the description of factor groups and ranging rates were used as a method of data collection. We involved 45 Ukrainian enterprises of different size and type of activity for questionnaire research in order to avoid concentration on a certain domain and obtaining a generalized result, admissible for all types of enterprises.

The blanks on the questionnaire consisted of the list of factor groups with their descriptions. The respondents had to rank the factor groups based on their importance to SIA development and indicate the weighting rate of each (general coefficient 1). The blank questionnaires were sent by e-mail to directors of enterprises or to the managers re-

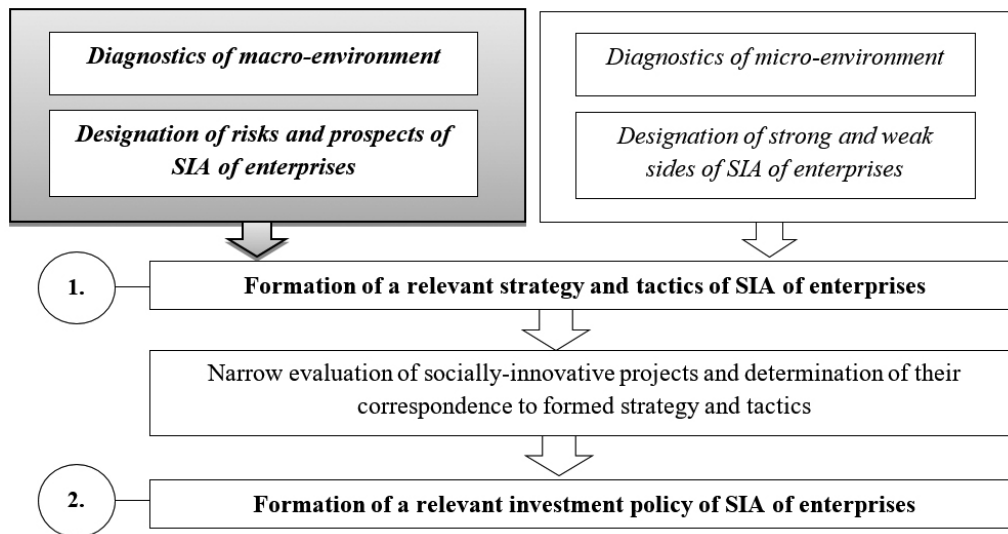


Figure 1: Place of SIA macro-environment diagnostics in general process

sponsible for such matters according to their recommendation. The reasoning behind the questionnaire was that the questions were pre-formulated, which prevented misunderstandings and allowed us to keep control over the order of the questions.

4 Results and discussion

4.1 Main elements of the SIA macro-environment

Mulgan et al. (2007) define social innovation as “innovative activities and services that are motivated by the goal of meeting a social need and that are predominantly developed and diffused through organizations whose primary purposes are social”. In general, social innovations are characterized by the following criteria: novelty; multiple dimensions of improvement; sector neutrality; urgency of social needs; engaging beneficiaries; and the transformation of social relations (Howaldt & Schwarz 2010; Lindhult 2008; Krlev et. al. 2014; Varmus & Lendel 2015; Vveinhardt & Kuklytė 2016). The main spheres of social innovations are new services and products; new processes; new rules; new practices; markets; organizational forms; business models (Landabaso & Liesbet De Letter 2013; Krlev et. al. 2014; Dainienė & Dagilienė 2015). Mostly, the dimensions of social innovation implementation are as follows: demography; environmental trends; community trends; poverty-related trends; trends in health and well-being; trends in ethical goods and services (Landabaso & Liesbet De Letter 2013; Androniceanu 2013).

On the basis of the results obtained in previous research, we propose the following definition of the term

“social innovation activity of an enterprise” as a special component of the innovation activity of an enterprise that is characterized by an improvement in the social factors for interested groups (consumers, employees etc.) that concern the environmental sphere, ethical responsibility for production and, in part, aspects of health and well-being as well as other spheres through the interaction with other participants in the social innovation ecosystem (non-profit organizations, government etc.) (Shpak et al. 2017).

The existing approach to the concept and the ecosystem of social innovations comprises four elements: the private sector, the public sector, the research sector, and the non-profit sector (The Young Foundation 2012). The ecosystem and the interrelation of its main elements may characterize the macro-environment of SIA through the following benefits: support for public and non-profit organizations; funding opportunities; and research support. The level of expenditure on research and development may be considered an initial point in a general ecosystem of SIA. Figure 2 represents the part of gross domestic spending on research and development in several countries relevant to three different European regions (Northern Europe, Central Europe, and Western Europe).

Three countries located in different parts of Europe were selected for a detailed analysis of all elements of the SIA ecosystem: Sweden (271 social enterprises), Austria (200 social enterprises), and the Slovak Republic (96 social enterprises). The choice of country was determined based on the availability of relevant data by all elements of the ecosystem. Table 1 and Figures 3-4 represent a more detailed analysis of the expenditure on R&D in the three designated countries.

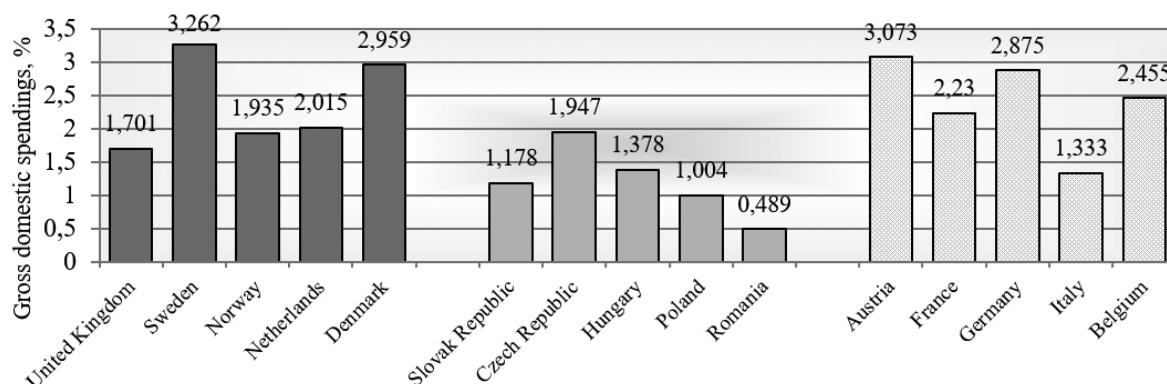


Figure 2. Gross domestic spending on R&D by three European regions, 2015. Source: OECD Data n.d.

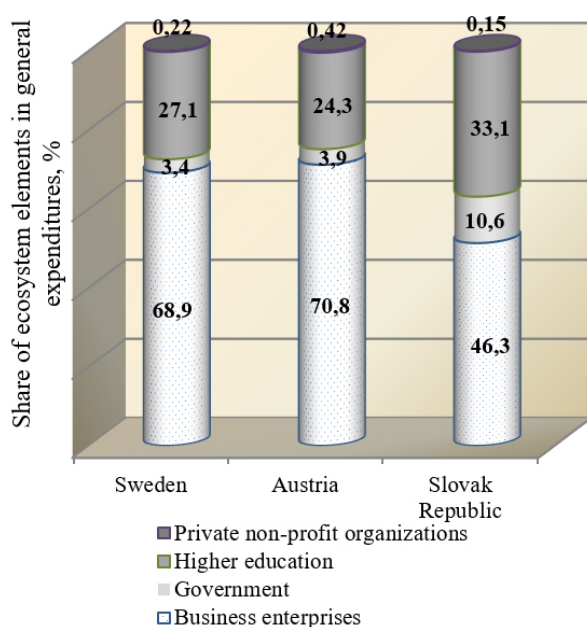


Figure 3. The structure of expenditures on R&D for social objectives by elements of the ecosystem
Source: OECD Data n.d.

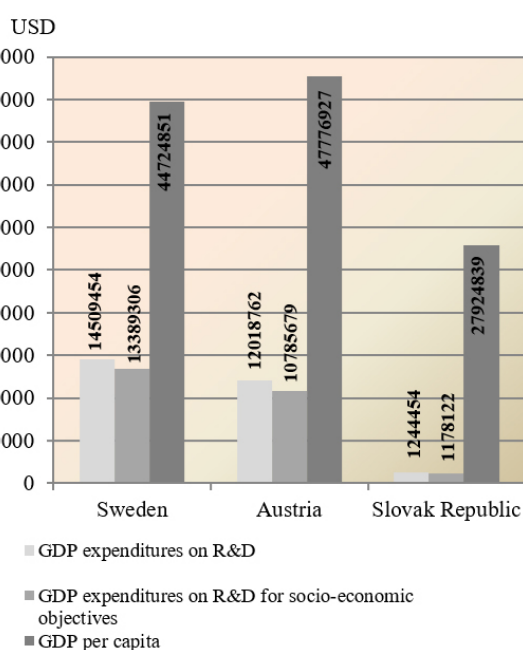


Figure 4. The expenditures on R&D in a general structure of GDP
Source: OECD Data n.d.

Table 1: Gross domestic expenditures on R&D for socio-economic objectives, by sector of performance, 2013.
Source: OECD Data n.d.

Countries	Elements of SIA ecosystem				Total (USD)
	Business enterprises (USD)	Government (USD)	Higher education (USD)	Private non-profit organizations (USD)	
Sweden	9 231 729	492 988	3 634 401	30 08	13 389 306
Austria	7 638 461	478 794	2 623 098	45 326	10 785 679
Slovak Republic	545 033	241 316	389 995	1 778	1 178 122

Table 2: Main features of the social innovation ecosystem in Sweden, Austria, and the Slovak Republic

Source: European commission. (2014). Country report: Slovakia; European commission. (2014). Country report: Austria; European commission. (2014). Country report: Sweden

Country	Ecosystem of SIA from the perspective of supporting mechanisms
Public support for SIA	
Sweden	There are no ministries which are specifically responsible for social enterprises, but there are a number of government agencies for supporting the development of the social enterprise market: the Swedish Agency for Economic and Regional Growth (Tillväxtverket), the Swedish Agency for Youth and Civil Society and the Swedish Public Employment Service.
Austria	State support for social enterprises consists primarily of financial support. Business support schemes also exist.
Slovak Republic	There are no public support schemes targeting social enterprises or social economy organizations apart from subsidies that cover a certain proportion of salaries of personnel hired in social enterprises.
Support of non-public organizations	
Sweden	There are developed networks and mutual support structures for social enterprises: The Partnership for the Development of Social Enterprises – facilitates collaboration, networking and social franchising, provides education and training programs in social entrepreneurship; The Swedish Association for Non-Profit Health and Social Service Providers – supports non-profit health and social service providers; The National Association for Social Work Cooperatives – provides training for social cooperatives, and creates the conditions for starting social work cooperatives.
Austria	The organization HUB Vienna brings together people who are striving for social change and provides social enterprises with both physical infrastructure and a community network. Ashoka is a global support network of social entrepreneurs. There are also two main networks in Austria that represent social services providers.
Slovak Republic	Provida Foundation and NESST Slovakia aim to provide financial and business support for the social enterprise sector in order to develop sustainable business plans and to provide start-up and incubation support. Currently, there is no social enterprise or social economy network in the country, although there are networks which bring together those who are concerned with the idea of the social economy: the Slovak Union of Production Cooperatives, the Slovak Union of Housing Cooperatives, the Union of Agricultural Cooperatives of the Slovak Republic or the Slovak Union of Consumer Cooperatives.
Funding opportunities	
Sweden	The most common source of finance is project funding, provided by the Swedish Inheritance Fund, municipalities and other public agencies. Financing is also obtained through public grants and subsidies, private and public foundations (such as the Swedish Inheritance Fund). In the ranking of sources for external finance, public funding is in first place, followed by grants from private and public foundations. Municipalities also act as guarantors and can supply loans.
Austria	The federal bank promotes businesses in Austria, and offers a wide range of support tools, although not specifically designed for social enterprises. Social enterprises receive financial support from the Public Employment Service to cover the costs incurred by hiring disadvantaged workers. Co-financing is also provided by the European Social Fund.
Slovak Republic	The major sources of financing and investment support are state and tax assignment by individuals and EU funds. There are also grants provided by the governments of Norway, Iceland and Liechtenstein in order to support the development and sustainability of non-profit organizations.
Research support	
Sweden	Research support includes the provision of education and training and support structures such as incubators. Inkludera Invest provides non-monetary support and guidance for social enterprises. The first incubator for social entrepreneurship is located at the Centre for Social Entrepreneurship in Stockholm, and Social Initiative helps social entrepreneurs to create operational business models. Some universities and higher education institutions provide incubator support for social innovation and entrepreneurship as well as Swedish folk high schools and study associations.
Austria	The Competence Centre for Non-profit Organizations of WU Vienna carries out teaching and research activity in the relevant field. Institut für Arbeitsmarktbetreuung in Carinthia and Institut für Ausbildungs- und Beschäftigungsberatung in Upper Austria provide consulting services for people wanting to run social enterprises and undertake relevant research projects or evaluation studies, e.g. to identify what the success factors are when running a social enterprise.
Slovak Republic	Some aspects related to social entrepreneurship are researched at the University of Comenius, although the university does not offer a degree. Matej Bel University has conducted research on social entrepreneurship.

The expenditures are analyzed from the point of four sectors of performance, which refer to the elements of the SIA ecosystem: the business sector, government, the non-profit sector, and the research sector. The expenditures for socio-economic objectives include the exploration and exploitation of the Earth; the environment; the exploration and exploitation of space; transport; telecommunication and other infrastructures; energy; industrial production and technology; health; agriculture; education; culture; recreation; religion and mass media; political and social systems; structures and processes; the general advancement of knowledge; and defense. Table 2 represents a detailed analysis of the supporting mechanism of SIA by each component of the ecosystem.

Summarizing the results obtained in this paragraph, it is possible to say that the main elements of the ecosystem interrelate and form a macro-environment of SIA by means of four components: public support; research support; financing opportunities; and business support.

4.2 Staged model of diagnostics of the enterprise SIA macro-environment

According to the analysis of relevant literature and based on the results obtained during the survey, it is possible to conclude that *diagnostics of the SIA macro-environment* is a process of complex evaluation and analysis of the influence that the elements of the macro-environment have

on enterprise SIA. The main *aim* of the process is to determine the level of public, research, and business support and financing opportunities and, as a result, adapt a strategy of SIA development in terms of the conditions determined. Diagnostics of the macro-environment of SIA is based on three stages (metrics and indicators for analysis; methods of analysis; interpretational support for relevant analytical conclusions) and hence includes the following key elements:

1. Complex analysis of the SIA macro-environment from the perspective of public, research, and business support, as well as financing opportunities.
2. Determination of risks and potential.
3. Adaptation of a strategy of SIA development in terms of determined risks and potential.
4. In order to define the main steps in the mechanism of SIA macro-environment diagnostics, we propose a three-stage model (Figure 5).

4.3 Factors of the SIA macro-environment

Based on an analysis of the literature and the main findings in part 4.1 concerning the social innovation ecosystem, we determined the list of factors of the macro-environment that influence the SIA of enterprises (Table 3). All factors are grouped according to the character of their influence. In order to determine the priority and significance of the

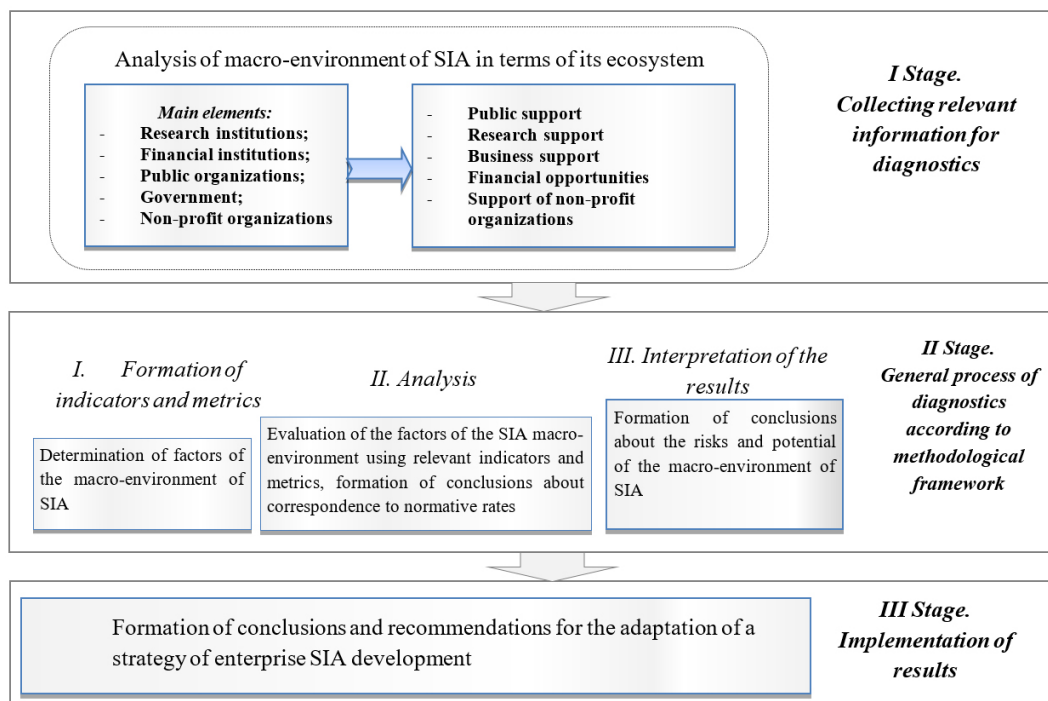


Figure 5. Three-stage model of diagnostics of the enterprise SIA macro-environment

influence, each group is classified within two categories to direct and indirect factors.

4.4 Indicators for diagnostics of the macro-environment of SIA

The analysis of factors forms a background for the diagnostics of the macro-environment of SIA. In order to avoid the difficulties connected with the interpretation of the influence level of each factor, we derived general indexes of SIA macro-environment, according to the number of factor groups. Within each group, all factors form the parameters for the aggregation of general indexes. All parameters can be measured by experts (analytics of enterprise) in a binomial manner after identifying either the correspondence (1) or disparity (0) of certain parameters to the expectations of experts. In Table 4 we propose the indexes and formulas for calculation.

For the calculation of the integrated index of the SIA macro-environment, we propose the weighting factors for each factor group. The rates for weighting factors were developed by generalizing the results obtained from the questionnaire (Figure 6).

We propose the following interpretation of the integrated index of the macro-environment, as a sum of aggregated indexes by each factor group. The integrated index shows a general distinct result in terms of the acceptability of the macro-environment of SIA:

$$IME_i = I_{fe} \times \mu_{fe} + I_{ira} \times \mu_{ira} + I_s \times \mu_s + I_{so} \times \mu_{so} + I_p \times \mu_p + I_c \times \mu_c + I_{it} \times \mu_{it} \quad (1)$$

where $\mu_{fe}, \mu_{ira}, \mu_s, \mu_{so}, \mu_p, \mu_c, \mu_{it}$ – weighting factors of each factor group correspondently, $(\mu_{fe} + \mu_{ira} + \mu_s + \mu_{so} + \mu_p + \mu_c + \mu_{it} = 1)$.

We propose to evaluate the general integrated index of the macro-environment of SIA according to a five-level interpretational scale which covers the interval [0 - 1] (see Table 5).

The proposed interpretational scale consists of five intervals for a general index of the SIA macro-environment. The higher the marginal rates of the interval, the more supportive and less risky the macro-environment of SIA. According to the proposed methodology, each enterprise provides diagnostics according to subjective expert evaluations. We propose the interpretation model that can be used by all enterprises in order to obtain a general vision of the obtained result and so have an understanding of the

Table 3: Factor groups of enterprise SIA. Source: author's research

Factor groups	Factors within groups
Direct factors	
1. Financial and economic factors	1) general state of the economy (growth, stagnation, recession, etc.); 2) absence of an economic crisis; 3) stability of the national currency, exchange rate fluctuations; 4) rate of inflation in the country; 5) level of business activity; 6) access to credits and their value; 7) stability and predictability of the economic situation; 8) tax policy and tax rates; 9) investment climate and incentives for investors etc.
2. Legislative, regulatory and administrative factors	1) normative and legislative acts that regulate social entrepreneurship, their stability/changeability and supporting character; 2) state policy in promoting social innovation activity of enterprises; 3) restrictive policy of the state for social innovation activity of enterprises; 4) variability of the legislative framework; 5) complexity and level of bureaucracy of administrative procedures; 6) corruption; 7) independence of judicial authorities etc.
3. Scientific factors	1) level of basic and applied sciences; 2) activity of innovation processes; 3) level of technological support industries; 4) programs for the stimulation and creation of innovation; 5) development of new technologies etc.
4. Social factors	1) level of income per capita; 2) development of the social security system in the country; 3) level of security for citizens; 4) quality of life; 5) level of unemployment; 6) democratic values in society; 7) public awareness etc.
Indirect factors	
5. Political factors	1) stability of the political environment; 2) political and military stability; 3) level of state regulation; 4) political risks; 5) openness of the authorities etc.
6. Culture factors	1) traditions; 2) rules of behavior; 3) moral values; 4) mentality of the population; 5) level of culture, etc.
7. International factors	1) trends of the world economy; 2) stability of the international financial and monetary system, 3) influence of international investment institutions, financial and investment funds; 4) impact of integration associations etc.

Table 4: Indexes of SIA macro-environment by factor groups. Source: author's research

Factor groups	Formulas	Explanation
Financial and economic (I_{fe})	$I_{fe} = \frac{\sum_{i=1}^n f_i}{n}$	I_{ma} – integral index of financial and economic factor group in the macro-environment of SIA, [0; 1]; f_i - indicator of correspondence of a certain parameter in the factor group to the expectations of experts (0 or 1); n – number of parameters (according to the determined number of factors in group $n = 9$).
Legislative, regulatory and administrative (I_{lra})	$I_{lra} = \frac{\sum_{i=1}^e l_i}{e}$	I_{lra} – integral index of legislative, regulatory and administrative factor group in the macro-environment of SIA, [0; 1]; l_i - indicator of correspondence of a certain parameter in the factor group to the expectations of experts (0 or 1); e – number of parameters (according to the determined number of factors in group $e = 7$).
Scientific (I_s)	$I_s = \frac{\sum_{i=1}^j s_i}{j}$	I_s – integral index of scientific factor group in the macro-environment of SIA, [0; 1]; s_i - indicator of correspondence of a certain parameter in the factor group to the expectations of experts (0 or 1); j – number of parameters (according to the determined number of factors in group $j = 5$).
Social (I_{so})	$I_{so} = \frac{\sum_{i=1}^m o_i}{m}$	I_{so} – integral index of social factor group in the macro-environment of SIA, [0; 1]; o_i - indicator of correspondence of a certain parameter in the factor group to the expectations of experts (0 or 1); m – number of parameters (according to the determined number of factors in group $m = 7$).
Political (I_p)	$I_p = \frac{\sum_{i=1}^q p_i}{q}$	I_p – integral index of political factor group in the macro-environment of SIA, [0; 1]; p_i - indicator of correspondence of a certain parameter in the factor group to the expectations of experts (0 or 1); q – number of parameters (according to the determined number of factors in group $q = 5$).
Culture (I_c)	$I_c = \frac{\sum_{i=1}^y c_i}{y}$	I_c – integral index of culture factor group in the macro-environment of SIA, [0; 1]; c_i - indicator of correspondence of a certain parameter in the factor group to the expectations of experts (0 or 1); y – number of parameters (according to the determined number of factors in group $y = 5$).
International (I_{it})	$I_{it} = \frac{\sum_{i=1}^z t_i}{z}$	I_{it} – integral index of international factor group in the macro-environment of SIA, [0; 1]; t_i - indicator of correspondence of a certain parameter in the factor group to the expectations of experts (0 or 1); z – number of parameters (according to the determined number of factors in group $z = 4$).

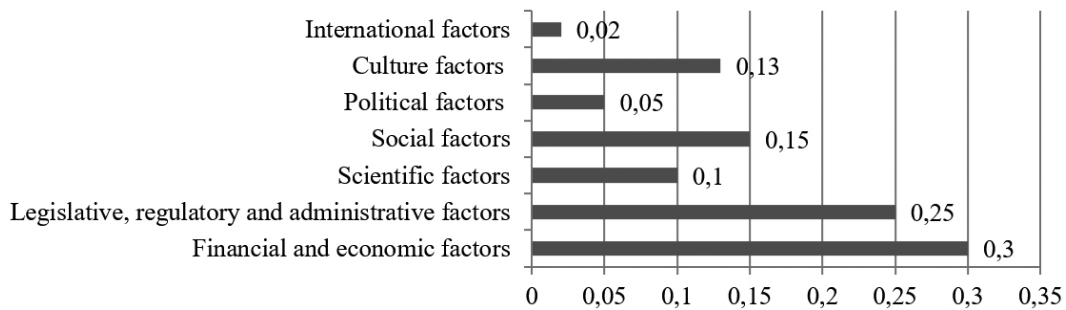


Figure 6: Weighting factors of factor groups of the SIA macro-environment. Source: author's research on the basis of the generalization of questionnaire results

Table 5: Interpretational scale for the general index of the SIA macro-environment. Source: author's research

Level	Description	Interval
Negative	Any supporting mechanisms are unacceptable, no possibilities for development, very high level of risk. Environment unacceptable.	(0-0,15)
Low	Risks outweigh potential. Supporting conditions almost entirely absent. Environment negatively unstable.	(0,16-0,25)
Satisfactory	The environment is equally supportive and risky.	(0,26-0,5)
Good	Several supporting mechanisms are indicated, low level of risk. Environment acceptable.	(0,6-0,75)
High	Numerous prospects and possibilities, absence of risk, low probability of occurrence. Very stable environment.	(0,76-1)

conditions of the SIA macro-environment. Nevertheless, the spectrum of values for the levels of the general integrated index may change according to the particular country in which an enterprise functions.

5 Conclusions

The research concerns the stage of general SIA diagnostics, particularly its macro-environment, and represents the finished toolkit for diagnostics at this stage. We predict that in subsequent research we will consider the diagnostics of the micro-environment partly using the obtained results, methodology and experience of current research. In turn, the analysis of the microenvironment will allow researchers to analyze the potential of enterprises for social innovation activity, its strengths and weaknesses, as well as all components of enterprise social innovation activity itself (technical, economic, environmental etc.).

The importance of these achievements is determined by outputs for the practical activity of enterprises which develop SIA. The influence of the macro-level is not under the control of the enterprise, but it forms the platform of SIA. Managers that are involved in the development of SIA may use the indicators of diagnostics for an analysis of the platform and evaluate the main external condi-

tions for SIA. This can help to predict the possible risks or supporting conditions for SIA from the perspective of the macro-environment and all the elements therein. Using the proposed toolkit with relevant indexes may facilitate this process and make it easier to justify. This can form arguments for the strategy and tactics of enterprise SIA. The results of this article may contribute to a discussion of the SIA investment policy of enterprises.

References

- Androniceanu, A. (2013). Local public management and business environment in time of globalized economic crisis, *Revista de Administratie si Management Public*, 21,84-91.
- Antadze, N., & Westley, F. R. (2012). Impact metrics for social innovation: barriers or bridges to radical change? *Journal of Social Entrepreneurship*. 3 (2), 133-150, <http://dx.doi.org/10.1080/19420676.2012.726005>
- Brest, P. & Born, K. (2013). *When can impact investing create real impact?* Retrieved August 4, 2016 from http://ssir.org/up_for_debate/article/impact_investing
- Bund, E., Hubrich, D., Schmitz, B., Mildenerberger, G. & Krlev, G. (2013). *Blueprint of social innovation metrics – contributions to an understanding of opportuni-*

- ties and challenges of social innovation measurement. *A deliverable of the project TEPSIE*. Brussels: European Commission. Retrieved August 14, 2016 from http://www.tepsie.eu/images/documents/D2.4_final.pdf
- Castro Spila, J., Luna, A., & Unceta, A. (2016). Social innovation regimes. An exploratory framework to measure social innovation. *Simpact Working Paper, 2016 (1)*. Gelsenkirchen: Institute for Work and Technology. Retrieved June 16, 2017 from http://www.simpact-project.eu/publications/wp/WP_2016-01_CastroSpila_Luna_Unceta_SIRegimes.pdf
- Caulier-Grice, J., Davies, A., Patrick, R., & Norman, W. (2012). Defining social innovation. Part one of social innovation overview: a deliverable of the project: "The theoretical, empirical and policy foundations for building social innovation in Europe" (TEPSIE), European Commission – 7th Framework Programme. Brussels: European Commission, DG Research. Retrieved June 16, 2017 from http://siresearch.eu/sites/default/files/1.1%20Part%201%20%20defining%20social%20innovation_0.pdf
- Corner, P.D. & Ho, M. (2010). How opportunities develop in social entrepreneurship. *Entrepreneurship Theory & Practice*, 34(4), 635–659, <http://dx.doi.org/10.1111/j.1540-6520.2010.00382.x>
- Dainienė, R. & Dagilienė, L. (2015). A TBL approach based theoretical framework for measuring social innovations. *Procedia – social and behavioral sciences*, 213, 275 – 280, <http://dx.doi.org/10.1016/j.sbspro.2015.11.537>
- Ethex (2015). *The Ethex positive investing report 2015*. Retrieved July 16, 2016 from <https://www.ethex.org.uk/positiveinvesting2015>
- Etzel, M. (2015). *Philanthropy's new frontier—impact investing*. Retrieved May 4, 2016 from http://ssir.org/articles/entry/philanthropys_new_frontierimpact
- European commission. (2014). *A map of social enterprises and their eco-systems in Europe; Country report: Slovakia*. ICF Consulting Services.
- European commission. (2014). *A map of social enterprises and their eco-systems in Europe; Country report: Austria*. ICF Consulting Services.
- European commission. (2014). *A map of social enterprises and their eco-systems in Europe; Country report: Sweden*. ICF Consulting Services.
- Formánková, S., Kučerová, R. & Prisažná, M. (2016). *ISO 26 000: Concept of social responsibility at Czech University*. In: International Conference on Management: Trends of Management in the Contemporary Society: Conference Proceedings (1 ed.). Brno: Mendelova univerzita v Brně, pp. 97-101.
- Gidron, B. (2014). Market-oriented social enterprises employing people with disabilities. *Journal of Social Entrepreneurship*, 5(1), 60-76, <http://dx.doi.org/10.1080/19420676.2013.829116>
- GIIN (2015). *Global impact investing network official website*. Retrieved July 2, 2016 from <https://thegiin.org/impact-investing/need-to-know/#s5>
- Hardi, P., Horwitch, M., & Mulloth, B. (2013). Achieving the hybrid middle ground in modern social entrepreneurship: A conceptual discussion with NYC-based clean technology enterprises as cases in point. In *Technology Management in the IT-Driven Services: Proceedings of PICMET '13*. IEEE, pp. 921-927.
- Hardi, P., Radacsi, G., & Schmitt, K. (2012). Evaluations of CSR performance and impact as seen by key actors other than business. *IMPACT Working Paper № 3*.
- Harji, K., Reynolds, J., Best, H., & Jeyaloganathan, M. (2014). *State of the nation: impact investing in Canada*. MaRS Centre for Impact Investing.
- HM Government Report (2016). *Social investment: a force for social change 2016 strategy*. HM Government Report, HM Government. Retrieved September 26, 2017 from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/507215/6.1804_SIFT_Strategy_260216_FINAL_web.pdf
- Hoelscher, M., Bund, E. & Mildenberger, G. (2015). A methodological framework for measuring social innovation. *Historical social research*, 40 (2015) 3, No. 153, 48–78, <http://dx.doi.org/10.12759/hsr.40.2015.3.48-78>
- Howaldt, J. & Schwarz, M. (2010). Social Innovation: concepts, research fields and international trends. Retrieved January 25, 2016 from www.internationalmonitoring.com/fileadmin/Downloads/Trendstudien/IMO-Trendstudie_Howaldt_englisch_Final%20ds.pdf
- JP Morgan and GIIN (2015). *Eyes on the horizon: the impact investor survey*. JPMorgan Chase & Co. and the Global Impact Investing Network.
- Krlev, G., Bund, E., & Mildenberger, G. (2014). Measuring what matters – indicators of social innovativeness on the national level. *Information Systems Management*, 31, 200-224, <http://dx.doi.org/10.1080/10580530.2014.923265>
- Landabaso, M., & Letter, L. (2013). *Guide to social innovation*. European Commission.
- Lendel, V., Hittmar, S., Sroka, W. & Siantova, E. (2016). Identification of the main aspects of innovation management and the problems arising from their misunderstanding, *Communications – Scientific Letters of the University of Zilina*, 18(1A), 42-48.
- Lindhult, E. (2008). "Are partnerships innovative?" In: L. Svensson & B. Nilsson (Eds), *Partnership – as a strategy for social innovation and sustainable change*, Academic Press, Stockholm, pp. 37-54.
- Macleam, M., Harvey, C. & Gordon, J. (2012). Social innovation, social entrepreneurship and the practice of contemporary entrepreneurial philanthropy. *International Small Business Journal*, 31(7), 747–763, <http://dx.doi.org/10.1177/0266242612443376>

- Madeleine, G. (2014). Making it big. Strategies for scaling social innovations. NESTA Publishing.
- Moravcikova, D., Krizanova, A., Klietkova, J. & Rypakova, M. (2017). Green marketing as the source of the competitive advantage of the business. *Sustainability*, 9(12), 2218, <https://doi.org/10.3390/su9122218>
- Mulgan, G., Tucker, S., Rushanara, A., & Sanders, B. (2007). *Social innovation. What it is, why it matters and how it can be accelerated*. The Basingstoke Press: London.
- OECD (2010). "Social entrepreneurship and social innovation in SMEs", Entrepreneurship and Innovation: OECD Publishing.
- OECD Data (n.d.). Gross domestic spending on R&D. Retrieved Mai 14, 2017 from <https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm>
- Patton, M. (2011). *Developmental evaluation: applying complexity concepts to enhance innovation and use*. New York: Guilford Press.
- Porter, M. & Ketels, C. (2003). *UK Competitiveness: Moving to the Next Stage*. DTI Economics Paper, 3. DTI: London.
- Reeder, N. & O' Sullivan, C. (2012). *Strengthening social innovation in Europe. Journey to effective assessment and metrics*, European Union Publishing.
- Shpak, N., Satalkina, L., Sroka, W. & Hittmar, S. (2017). The social direction of enterprises' innovation activity, *Polish Journal of Management Studies*, 16(1), 187-201.
- Ślusarczyk, B., Kot, S. (2016). The impact evaluation of the innovation implementation within the EU funds on the SMEs performance results, *International Journal of Mechanical and Industrial Engineering*, 10(2), 449-453.
- The innovation policy framework "Metrics and evaluation for innovation in firms" Retrieved June 26, 2017 from <https://www.innovationpolicyplatform.org/content/metrics-and-evaluation-innovation-firms>.
- The Young Foundation (2012). Social innovation overview: A deliverable of the project: "The theoretical, empirical and policy foundations for building social innovation in Europe" (TEPSIE), European Commission – 7th Framework Programme, Brussels: European Commission, DG Research.
- Vaccaro, J. (2014). *Impact investing for everyone*. Retrieved June 8, 2016 from <http://www.socialimpact-investment.org/reports/Triodos-Bank-report-on-Impact-investing.pdf>.
- Válová, A., Formánková, S. (2014), *Corporate philanthropy in the Czech Republic*. In: D.Nerudová (Ed.), 17th International Conference Enterprise and Competitive Environment 2014. Elsevier Science Bv: Amsterdam, pp.725-732.
- Varmus, M. & Lendel, V. (2015). Innovative climate and lateral thinking – the key factors for work with innovations in the enterprise, *Forum Scientiae Oeconomia*, 3(3), 5-11.
- Volynets, I. (2015). *Social Innovation and Aboriginal Communities*, UAKN National Secretariat: National Association of Friendship Centres.
- Vveinhardt, J. & Kuklytė, J. (2016). Development improvement programme of social business models in Lithuania, *Forum Scientiae Oeconomia*, 4(3), 149-170.
- Vveinhardt, J., Andriukaitiene, R. & Cunha, L. M. (2014). Social capital as a cause and consequence of corporate social responsibility. *Transformations in Business & Economics*, 13(2A(32A)), 483-505.

Liliya Satalkina works as an Assistant Professor of the Department of management and international business in Lviv Polytechnic National University. In 2016 obtained the degree of Ph.D in Economics. The professional experience and qualifications refer to scientific researches and teaching activity. Published 28 publications, including articles in international peer-reviewed journals. Provided such courses as: Social responsibility, Investment and innovation projects of enterprise, International economics, Management, Global economics. Areas of scientific interests: Innovation and investment activity of enterprises, Social responsibility of business.

Nestor Shpak is a Full Professor of the Department of management and international business, Lviv Polytechnic National University. Takes post of Associate Professor of the Department of Management and International Business. In 2012 has finished Doctoral Programme and defended thesis work for obtaining the degree of Doctor of Science. Has published 170 of scientific publications, including those in international peer-reviewed journals. Teaching activity concerns the following disciplines: Economics and management of enterprises, Intellectual property, Transfer of technologies, Communicative management, Management of Projects. Areas of scientific interest: sustainable development, innovative management, commercialization of intellectual property, informational communications, social innovations.

Evaluacija vpliva makro-okolja na družbeno inovacijsko dejavnost podjetij

Ozadje: Danes je poudarek na družbenih komponentah v inovacijske dejavnosti eden najmočnejših dejavnikov za uspešno delovanje in razvoj podjetij. V številnih državah postaja dejavnost družbeno inovacijske aktivnosti podjetja del poslovnega procesa, povezana s pričakovanji glede dobička.

Cilji: Cilj članka je razviti orodje za ovrednotenje vpliva makroekonomskega okolja na družbeno inovacijsko dejavnost podjetij.

Metoda: Uporabljena metodologija vključuje elemente teoretičnih in empiričnih raziskav z izvajanjem metod, kot so pregled literature, različne vrste analiz in metode združevanja in integracije. Vprašalniki so bili uporabljeni kot sredstvo za zbiranje podatkov.

Rezultati: Razvili smo splošen metodološki okvir diagnostike makro okolice družbeno inovacijsko dejavnost. Na podlagi teoretične analize ekosistema družbeno inovacijsko dejavnosti in izkušenj konkretnih podjetij smo določili glavne dejavnike makro-okolja družbeno inovacijsko dejavnosti. Kot merilo za ovrednotenje makro okolij družbeno inovacijsko dejavnosti so predlagani splošni integrirani indeks in njegov pet plasti interpretacijski model.

Zaključek: Predstavljeni rezultati omogočajo pridobiti podatke, ki so potrebni za utemeljitev strategije in taktike družbeno inovacijsko dejavnosti ter naložbene politike na tem področju.

Ključne besede: *podjetništvo; družbena inovacijska dejavnost; diagnostika; makro-okolje; dejavniki*

DOI: 10.2478/orga-2018-0004

Measuring the Concentration of Insurance sector – the Case of Southeastern European Countries

Maja DIMIĆ¹, Lidija BARJAKTAROVIĆ², Olja ARSENIJEVIĆ¹, Polona ŠPRAJC³, Janez ŽIROVNIK³

¹ University Union Nikola Tesla, Faculty of Business Studies and Law, Staro sajmište 29, 11000 Belgrade, Serbia
maja.dimic@fbsp.edu.rs, Serbia, olja.arsenijevic@fbsp.edu.rs

² University Singidunum, Faculty of Business Belgrade, 32 Danijelova St., Belgrade, Serbia
lbarjaktarovic@singidunum.ac.rs

³ University of Maribor, Faculty of Organizational Science, Kidriceva cesta 55a, 4000 Kranj, Slovenia
polona.sprajc@fov.uni-mb.si, janez.zirovnik@guest.um.si

Background and purpose: The goal of the paper is to determine the level of concentration in the insurance sector in the following eight countries of South and Eastern Europe: Serbia, Croatia, Bosnia and Herzegovina, Montenegro, Former Yugoslav Republic of Macedonia, Romania, Bulgaria and Albania in the period from 2007 to 2012.

Design/Methodology/Approach: In this context, the analysed indicators of concentration were the market share of the four leading financial institutions (CR4), the Herfindahl-Hirschman Index (HHI), the coefficient of entropy (E), the coefficient of relative entropy (RE) and Gini coefficient (G).

Results: The study showed that the insurance sectors in the analysed countries are highly concentrated on average (according to CR4 indicator), medium concentrated (according to HHI) with high levels of inequality of distribution of market shares between individual participants (in terms of G coefficient), and in the zone of relative uniformity and equality of business entities (according to RE coefficient). The research results point out that the existence of different levels of correlation between the analysed indicators of concentration in the insurance sector, which confirms the conclusion that, in order to obtain relevant and quality conclusions about the level of concentration, it is necessary to review and analyse several indicators of concentration integrally.

Conclusion: In all observed indicators of concentration in relation with the density level GDP pc move in the zone of very low value, which on the one hand points to the fact that the analysed countries at a relatively similar level of development have significantly different levels of concentration, but also on the fact that some countries although at different levels of development, have similar levels of concentration.

Keywords: *insurance sector; concentration level; concentration indicators; South-Eastern European countries*

1 Introduction

The concentration process, as a result of the strong global economy, leads to the development of relatively large companies, which become economically stronger and have the ability to obtain a more favourable position in the market. The concept of concentration in the financial sector is defined as a form of connecting institutions under

a common control system, which consequently creates a certain level of economic community among them that did not exist before. Hawkins and Mihaljek (2001) identify the following motives for financial institution mergers:

1. Cost benefits (economies of scale, organisational efficiency, cost of funding, risk diversification, economising on capital);
2. Economic conditions (mergers after crises or during

an upswing of the business cycle); and other motives (private managerial benefits, defence against take-overs, etc.).

The goal of the paper is to determine the level of concentration in the insurance sector in the eight selected countries of South and Eastern Europe (SEE): Serbia - SRB, Croatia - CRO, Bosnia and Herzegovina- BiH, Montenegro - MNE, Former Yugoslav Republic of Macedonia - FYRM, Romania - ROU, Bulgaria - BGR and Albania- ALB, with the comparable level of gross domestic product /GDP/ (CRO is exception) within the period 2007-2012.

There are several reasons for analysing this time period. Firstly, the beginning of the analysed period is marked by the appearance and later with the expansion of the economic crisis spilled over from the United States of America (USA) to Europe. Secondly, in this economic environment, it is interesting to examine the approach in which the financial institutions, in particular insurance companies which represent the focus group, are going to fight with the negative effects of the crisis: will they increase their market shares in the countries in the region by opening new branches or will they focus on mergers and/or acquisitions in order to maintain the leading position in the market? Thirdly, will the mergers of financial institution lead to a reduction of the total number of institutions operating in the region as well as increase a concentration level? The analysed period of six years was long enough to give an overview and evaluate changes related to the formation of appropriate control balance in certain markets. The research may also help in understanding the trends of concentration in the insurance sector in the future. The authors begin with the following assumptions and check the validity of the hypothetical statement in the empirical research:

(H1): There is a high level of concentration in insurance sector in SEE region. Indicators: indicators of concentration: market share of the four leading financial institutions (CR4), Herfindahl-Hirschman Index (HHI), Gini coefficient (G), coefficient of entropy (E), and the coefficient of relative entropy (RE) based on development criteria in insurance sector: total earned premiums, total earned non-life premiums and total earned life premiums.

(H2): There are significant differences in the level of correlation between each of the analysed indicators of concentration in the insurance sector in selected countries of SEE. Indicators: indicators of concentration: CR4, HHI, G, E, RE based on development criteria in insurance sector: total earned premiums, total earned non-life premiums and total earned life premiums.

(H3): The level of concentration in the insurance sector is poorly correlated with the level of economic development in the analysed SEE countries. Indicators: indicators of concentration: CR4, HHI, G, E, RE based on development criteria in insurance sector: total earned premiums,

total earned non-life premiums, total earned life premiums and GDP per capita.

Empirical and scientific studies in SEE region confirm that a market structure with its characteristics affects the behaviour of financial institutions, primarily the banking sector: their performance and mostly profitability (Kundid et al., 2011; Ćurak et al., 2012; Athanasoglou et al., 2006). When it comes to the level of concentration in insurance sector in the region, Njegomir and Stojić (2011) are pioneers in analysing this market structure. The authors (Njegomir, & Stojić, 2011) examined the segment of non-life insurance in 11 countries in Eastern Europe in the period 2004-2008. The results of the model indicate that a low level of concentration has a minor, but positive impact on profitability. However, as the market concentration increases on one side, it reduces the effect on profitability on the other side. So far conducted scientific and empirical research about the level of concentration in the insurance sector is mostly focused on analysing one of the SEE countries or their comparison with EU member states, as well as only individual indicators of concentration, usually HHI and CR4. The aim of the paper is to use multiple indicators of concentration as well as to determine and explain valid results of an empirical analysis of the concentration level in selected SEE countries. Furthermore, the projected methodological instruments and the concrete results of empirical research could have broader applications in finding adequate solutions against unwelcome market structures in the insurance sector.

For the empirical research, authors have used the following resources for the period 2007-2012:

- Serbia: National bank of Serbia (Insurance sector reports and Annual reports)
- Croatia: Croatian insurance bureau (Insurance market in the Republic of Croatia)
- Bosnia and Herzegovina: Insurance supervision agency (Statistics of insurance market)
- Montenegro: Insurance supervision agency (Report on insurance market in Montenegro)
- Former Yugoslav Republic of Macedonia: Insurance supervision agency (Report on the scope and content of the insurance operations)
- Romania: Romanian Insurance Supervisory Commission (Annual report on the activity performed and the insurance market development)
- Bulgaria: Financial Supervision Commission (Statistics: Markets – non-life insurance companies, Life insurance companies)
- Albania: Albanian Financial Supervisory Authority (Insurance geography statistical report)

2 Literature review

Concentration is defined as a measure of subject participation in cumulative sales, assets or market share and it is usually determined by the number of companies in an industry and by their relative size (Zingales et al., 2003). Measurement of concentration in the banking sector is very specific due to the problem of identification of products and services traded (Miljković et al, 2013). In theory there are two directions to determine the mentioned relation, i.e. authors who proved and authors who didn't prove that relation. In the first group there are authors who believe that concentration and competitiveness are in negative relation, i.e. high level of concentration leads to a decrease of market competitiveness. Chamberlain, Hall and Hitch, and Sweezy showed that oligopoly markets can limit competitiveness (Kraft, 2007). Bikker and Haff (2001) proved on the basis of empirical research that there is high level of correlation between HH index and concentration ratio.

We should not neglect the fact that foreign investors, when entering a new insurance market, are faced with a series of containing factors: undeveloped financial market, limits in presentation of new funds, big founding stakes in relation to European Union, low insurance culture and lack of confidence of the citizens in insurance institution. In addition, the inflow of foreign investments also depends on financial stability of a country and its credit rating, inflation and exchange rate movement (Dimić, 2015). The process of privatization of insurance companies in the region was carried out differently in the analyzed region. In that way, Croatia and Serbia have carefully entered this process and retained the ownership of the national insurance companies, which was not the case in Montenegro and Macedonia (Dimić, 2015).

Very often the issue of justification of foreign investors' entrance to insurance market in financially undeveloped countries is brought about (Dimić et al, 2017). According to previous studies, there are several key advantages: development of life insurance, improvement of corporate management and risk management in business, improvement of service quality, introduction of new and high quality service packages, increase of health competition, strengthening of transparency in business, transfer of technological and managerial know-how, external funding sources.

In scientific references there are divided attitudes when it comes to ownership transformation in financial sector. Thus one group of authors believe that high share of foreign ownership in total balance sum and insurance premium (or capital) can represent a great problem to the development of economy in the analyzed region of SEE. In addition to the growth of concentration level caused by merging of financial institutions, it is required to monitor the concentration level of each financial institution individually, as well as „mother“ companies that affect the business policy of

financial institutions in region through the administration and supervisory board. On the other hand, group of authors concludes that entrance of foreign insurance companies to financial market of the analyzed region has a positive effect on competition. In that context, entrance of foreign financial investors increases competition pressures (because it carries along new technologies and new knowledge) to the domestic financial system. Taking that into consideration, it is no wonder that in the last twenty years the share of foreign ownership in insurance sector was increased in the region analyzed. Although the increase of market concentration is the most frequent sign of dropping intensity of competitiveness, some studies (Beck et al, 2003) point out that greater presence of foreign financial mediators mitigates negative aspects of greater market concentration.

3 Explaining the research method

Empirical research of concentration level in the insurance market is based on appropriate criteria of the development in the insurance sectors: total earned premiums, total earned non-life premiums and total earned life premiums. In this context, the mention criteria of the development are used as inputs for calculating the level of concentration: CR4, HHI, E, RE, G (Table 1).

An empirical analysis of the concentration level in the insurance sector in the SEE region is based on the available data which are processed by using statistical software packages and tools: Microsoft Excel and the Statistical Package for the Social Sciences (SPSS). Data analysis aims to determine the level of each indicator of concentration in the insurance sector in the analysed countries as well as to calculate their variability in the period 2007-2012. At this point, empirical research was carried out in three steps:

1. Calculation of concentration indicators in the analysed countries by using three criteria of development in the insurance sectors as inputs;
2. Determination of the average value of the concentration indicator in each country in the analysed period as well as the weighted average value of the concentration indicator for the region in each one year. Having in mind that the different levels of total premiums, as well as premiums of life and non-life insurance, occur in the analysed countries, the weights are used as the share of indicators' total.
3. Determining statistical measures of variability (level of variability of the concentration indicators) by using the coefficient of variation as a relative measure of variability. In this context, authors analysed: dynamic changes (variability) of concentration levels by each country in the period 2007-2012 as well as changes (variability) of concentration levels between the countries analysed in each year.

Table 1: Market concentration indicators. Source: Dumičić et al. 2012; Ljubaj, 2005

Indicator	Marks and interval value	Explanation of indicators' value
Concentration ratio	$1/n \leq C_r \leq 1$	Index value is closer to 0 when there are a large number of firms with the similar market share. Index value is closer to 1 when the sum of "n" firms create a market.
Herfindahl-Hirschman index	$1/n \leq HHI \leq 1$	The higher value of indicator create the higher level of concentration. When the indicator value is 10.000 there is a monopolistic competition.
Entropy concentration index	$0 \leq E \leq \log n$	The higher the entropy concentration index, the lower level of concentration is. In the case of a monopolistic competition the index value is 0.
Lorenz curve	-	The higher the coefficient, the more unequal the distribution is.
Gini coefficient	$0 \leq G \leq 1$	The higher the coefficient, the higher level of concentration is. In the case of inequality, the indicator value is 1.

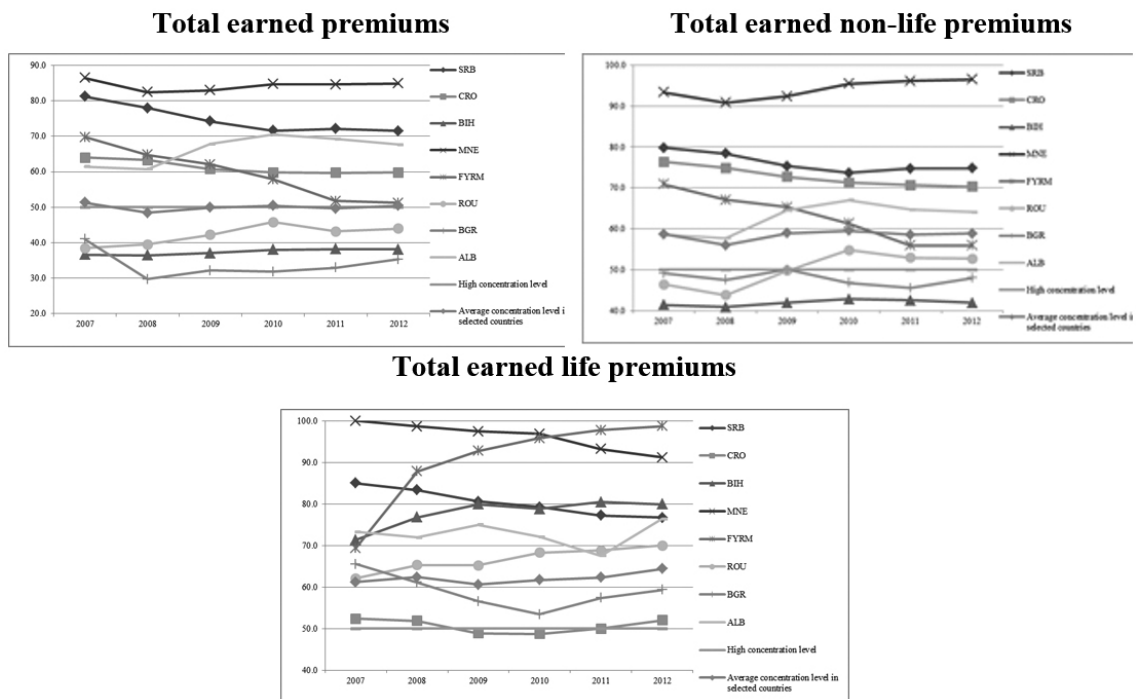


Figure 1: CR4

A particular part of the research relates to the determination of the correlation between indicators of concentration, as well as between indicators of concentration and levels of GDP pc. At this point, Pearson and Spearman correlation coefficients are used. Correlation analysis of individual indicators of concentration in the SEE region in a defined period of time can indicate the extent to which, when assessing real developments and changes, we can rely on a smaller number of indicators (if there is a high correlation level among them) and thus ease research and analysis,

or whether in case of absence of significant correlation, we need to focus on the simultaneous analysis of a large number of indicators of concentration. In addition, authors examine whether the country with relatively similar GDP pc have the similar or different levels of concentration in the insurance sector, or whether countries with relatively similar levels of concentration have the same or different GDP pc, by using Spearman correlation coefficient.

4 Empirical research

4.1 Concentration ratio - CR4

CR4 average values show that the analysed countries in the SEE region recorded a high level of concentration (Figure 1). According to the criteria of the total earned premiums the concentration level is on the border line of 50%, while in the case of premiums of non-life and life insurance concentration level is 60%.

According to total earned premiums BiH, BLG and ROU are below the line of high concentration level (Figure 1). The highest concentration level is recorded in MNE and SRB, 86% and 81%, respectively, while the concentration level in other selected countries were between 60% and 70%, which is still 10 to 20 percentage points above the line of moderately concentrated market.

Situation is similar according to total earned non-life premiums. It is significant to underline that 4 insurance companies in MNE (total of 5, i.e. 7 in 2008 and 6 in 2009, only non-life insurance) have the market share of 94%. High levels of concentration appear in SRB and CRO, where CR4 indicator is over 70%. On the other hand, the lowest levels of concentration are in BiH and BLG, 42% and 48%, respectively.

According to the total earned life premiums, CR4 indicator is above the line of high concentration in all analyzed countries (with the exception of CRO, where CR4 is approximately 50%). Similarly to the previously mentioned cases, the highest levels of concentration exists in MNE (96%) and FYRM (90%). CR4 indicator was between 60% and 80% in other analyzed countries. There were no significant variations by country in the level of concentration according to CR4 indicator.

The major coefficients of variation of CR4 are recorded in FYRM (in terms of total earned premiums and total

earned life premiums), while the minimum coefficients of variation are in the MNE and BiH insurance market, observed by countries. Variations between countries are several times higher and illustrate that the coefficients of variation of CR4 are major according to the criteria of total earned non-life premium (about 7 percentage point), with the highest concentration changes during the period 2008-2009.

4.2 Herfindahl-Hirschman index

When it comes to the concentration level analysis based on HHI in the insurance market in the analysed region, it can be concluded that this segment of the financial market, with an average concentration values of total earned premiums, total earned non-life premiums and total life premiums of 1,100, 1,350 and 1,460 points respectively, is located in group of moderately concentrated market (Figure 2).

According to total earned premiums criteria, the highest level of concentration was in MNE (above 4.000 points in 2007 and 2008) measured by HHI. In addition, SRB was in the group of highly concentrated markets with 2.000 points in initial two years. In the following years, HHI decreased and in the end of 2012 was 1.600 points in SRB. On the other hand, the lowest level of concentration is measured in BiH, ROU and BLG (lower than 1.100 points).

In terms of total earned non-life premiums criteria, the highest concentrated markets were MNE (with average concentration level of 4.150 points), CRO (with average 1.973 points) and SRB (with average 1.948 points), while other analysed countries were below the line of high concentrated markets, entering the group of moderately concentrated market, and emphasizing BiH as a country with the lowest level of concentration (720 points).

Table 2: Coefficients of variation of CR4 (in %)

Coefficients of variation by each country in the period 2007-2012				Coefficients of variation between countries by each year			
Country	Total earned premiums	Total earned non-life premiums	Total earned life premiums	Year	Total earned premiums	Total earned non-life premiums	Total earned life premiums
SRB	5.3	3.2	4.1	2007	31.0	25.9	14.6
CRO	3.1	3.4	3.3	2008	33.0	27.3	14.8
BiH	2.1	1.7	4.4	2009	28.4	20.9	18.8
MNE	1.7	2.4	3.5	2010	25.2	18.6	19.1
FYRM	2.4	9.8	12.2	2011	26.3	20.3	17.2
ROU	6.5	8.5	4.4	2012	24.8	19.7	16.4
BLG	11.7	3.4	7.1				
ALB	6.2	5.9	4.2				

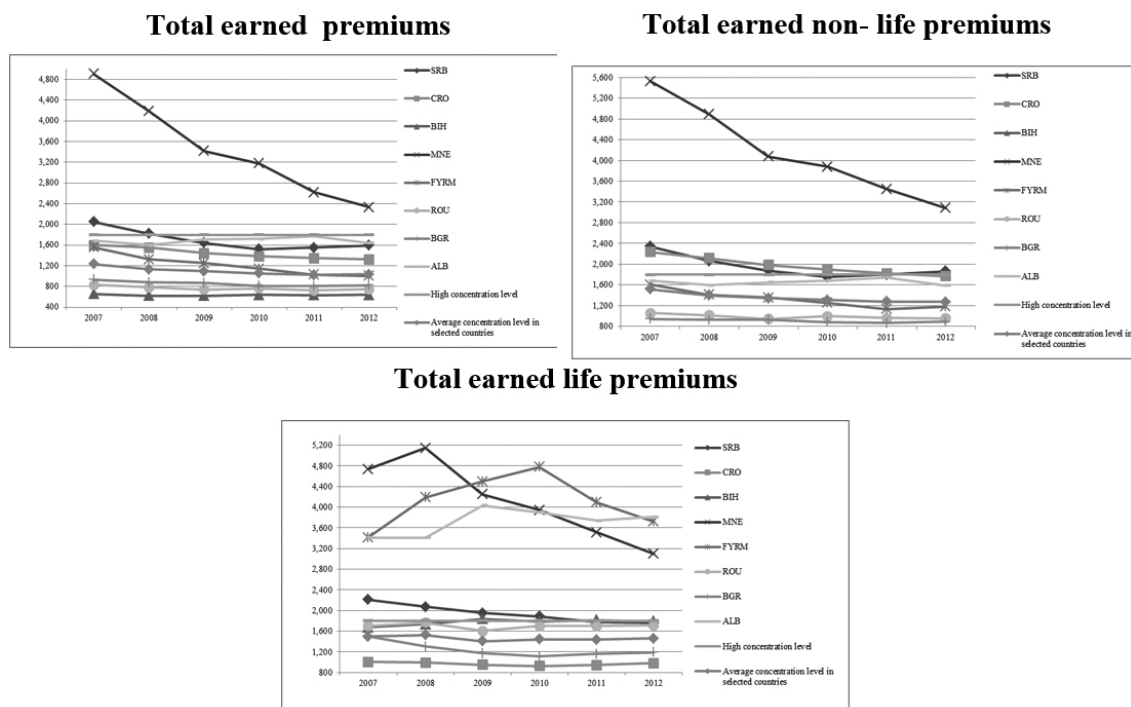


Figure 2: HHI

HHI values for the total earned life premiums criteria show that MNE and FYRM (with the average values of 4.000 points) as well as ALB (with 3.700 points) were highly concentrated markets in the analysed region. On the other side, the CRO insurance market had the lowest level of concentration.

Coefficients of variation of HHI were significantly higher when analysing changes between countries (most evident according to the criterion of non-life insurance premiums).

The highest coefficient values of variation were recorded in the 2007-2009 period, with a declining tendency. If we look inside the country during the period 2007-2012, we can conclude that insurance market in MNE changed most significantly, especially in relation to total earned premiums (28.1%). Opposite, lowest fluctuations are present in the BIH insurance market (1.6% in non-life insurance premium) in the dynamic model.

4.3 The coefficient of entropy

The coefficient of entropy has certain disadvantages when it is used in the comparative analysis in a dynamic context. In a situation, which is typical for this research paper, where there is a particular market (country) in a different period of time (a year) and number of business entities (insurance companies), E coefficient should be adjusted in order to allow comparison between countries as well as

different time points (years). In this context, *RE* is calculated as a ratio of E value and a maximum E value for a given number of entities (expressed as the natural logarithm of the number of insurance companies - \log_n). Further, the *relative distance of concentration (RE)* is measured with ranges from 0 (highest concentration) to 1 (the lowest concentration). This indicator takes into account differences in the number of business entities in the selected countries and period of time and has an important result corrective of E coefficient. In the case of SRB, E coefficient of total insurance premium in 2012 was 2.22602. If we consider this market structure between the two extremes (0 and $E = \log_n$), respectively, 0 and 3.178 (which is the normal logarithm of the number 24 - insurance companies operating on the Serbian insurance market in 2012), it can be assumed that Serbian insurance market is closer to the upper extreme (3.178). Relative distance of concentration amounts to 0.70 (70%) and indicates that the existing market structure is closer to market share equality. The higher relative distance of concentration indicates lower degree of concentration.

Average values of the RE coefficient in the insurance sector in the analysed countries in the region illustrate the following results: 0.78 (78%) total earned premiums, 0.77 (77%) total earned non-life premiums and 0.8 (80%) total earned life premiums. If we look at each criteria of development in insurance sector separately, we can conclude that there are no significant differences between them in the analysed period. It can be ascertained that the high av-

average value of the RE coefficient leads to the conclusion that the insurance market in the analysed region is closer to a competitive market structure than oligopoly or monopoly. The results presented in the Figure 3, show an increasing trend of stagnation of RE coefficient according to analysed criteria of the development of the insurance sectors.

Four (FYRM, BiH, ALB, BLG) out of eight analysed countries recorded higher values of relative entropy in comparison with the average value, according to the criterion of the total earned premiums and total earned non-life

premiums. Additional countries, with recorded amounts below average value of the region, had lower level of relative distance of concentration. In this context, it can be concluded that distribution of market shares have become less equal with greater concentration in these markets.

In regards to total earned life premiums, ALB, BLG and CRO were in the group with higher values of relative distance than calculated average value of the region. It can be concluded that the CRO and BLG markets are more developed in comparison with Albanian in the segment of

Table 3: Coefficient of variation of HHI (in %)

Coefficients of variation by each country in the period 2007-2012				Coefficients of variation between countries by each year			
Country	Total earned premiums	Total earned non-life premiums	Total earned life premiums	Year	Total earned premiums	Total earned non-life premiums	Total earned life premiums
SRB	12.0	11.3	8.9	2007	47.4	48.6	31.7
CRO	7.8	9.1	3.3	2008	45.2	46.3	34.0
BIH	2.0	1.6	3.3	2009	41.2	43.6	38.6
MNE	28.1	22.0	18.5	2010	38.1	40.2	38.4
FYRM	16.9	13.0	12.1	2011	37.3	39.5	36.2
ROU	5.1	4.4	3.1	2012	34.9	37.7	32.9
BLG	5.8	3.3	11.4				
ALB	3.7	3.5	6.9				

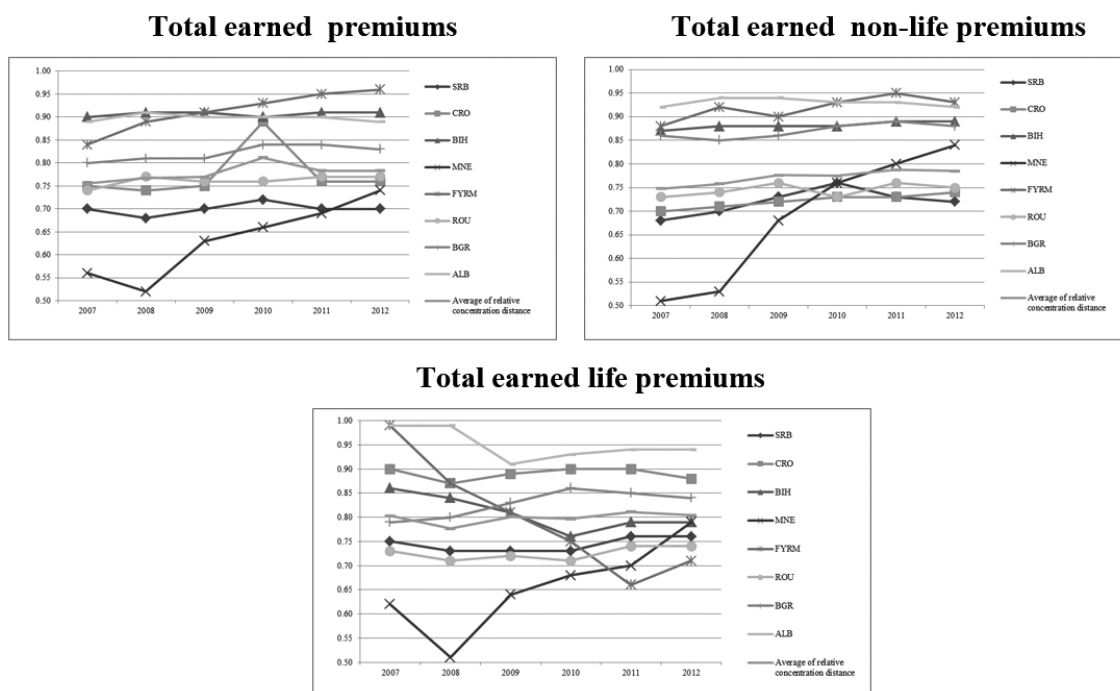


Figure 3: RE coefficient

life insurance, taking into account the number of insurance companies in the market. Although the value of relative distance of concentration in the ALB insurance market exceed 90% (indicating equal distribution of participation in general) this segment of insurance market is underdeveloped, because there were only three insurance companies operating in life insurance during this period.

Coefficients of variation of RE illustrate that the major changes occurred between countries, with evident fluctuations according to criteria of total earned non-life premium

and total earned life insurance premium in terms of the level of concentration in the insurance sector.

The highest values of the coefficient of variation of RE (according to all analysed criteria) are found in 2010. On the other hand, major changes in terms of total earned non-life premiums criterion occurred in the insurance market in MNE (20,3%), while the smallest oscillations are recorded in the insurance market in BiH and ALB (especially in total earned premium and total earned non-life premiums) in dynamic model.

Table 4: Coefficients of variation of RE (in %)

Coefficients of variation by each country in the period 2007-2012				Coefficients of variation between countries by each year			
Country	Total earned premiums	Total earned non-life premiums	Total earned life premiums	Year	Total earned premiums	Total earned non-life premiums	Total earned life premiums
SRB	1.8	3.8	2.0	2007	6.4	9.7	9.9
CRO	7.3	2.0	1.4	2008	7.4	9.0	9.8
BIH	0.6	0.9	4.5	2009	6.8	7.9	9.8
MNE	12.9	20.3	14.2	2010	8.4	8.8	11.1
FYRM	4.8	2.7	15.0	2011	7.3	8.8	9.2
ROU	1.5	1.9	1.9	2012	7.2	8.6	7.6
BLG	2.1	1.8	3.3				
ALB	0.8	1.0	3.5				

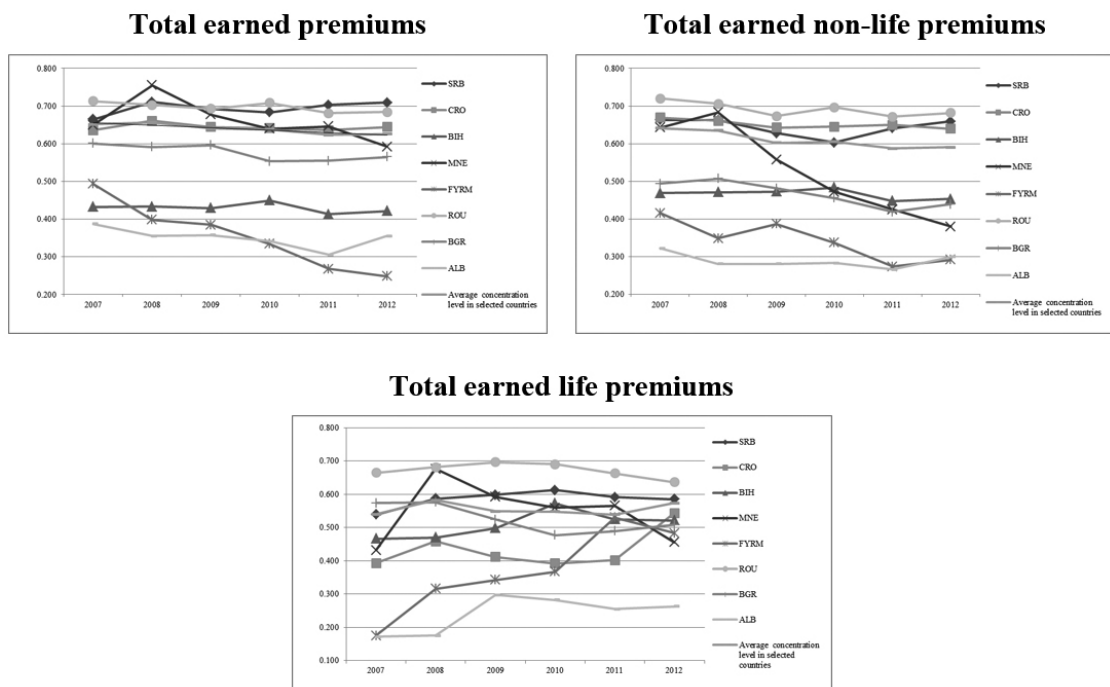


Figure 4: G coefficient

4.4 Gini coefficient

Average values of G in insurance sector SEE countries have values around 0.6 which indicates that there are high levels of inequality of distribution of market shares between individual participants in the region.

According to total earned premiums criteria, values of G indicates that ALB and BiH are the markets with the lowest level of concentration, while ROU and SRB insurance markets values of 0.7 belong to the most concentrated markets in the region.

In terms of total earned non-life premiums criteria, G values of BiH, BGR and partly MNE insurance market are about 0.5. The lowest level of concentration was recorded on ALB insurance market (about 0.3), while other countries had values in the range 0.6 and 0.7.

More significant changes were recorded in the life-insurance segment. Accordingly, the lowest concentration level was on ALB market (about 0.3); on borders of even distribution was BiH, while the highest level of concentration was achieved in ROU (0.7).

Values of G variation coefficient in insurance markets shows that significant changes happened between the countries per particular years, where the highest values of variations of coefficient were recorded in terms of life-insurance premiums (above 20%, with exception in 2008 and 2012). Accordingly, significant variations of G in life-insurance premiums were recorded in FYRM (34.3%) and ALB (22.5%), while the lowest values were in CRO (with the exception of life-insurance premium) and ROU insurance market.

5 Interpretation of the results

5.1 Testing of H1

Analysis of obtained values lead to following conclusions:

1. The level of concentration and inequality in the insurance sector in the region has stagnated during this period; average values of CR4 indicates high level of concentration, especially in the segment of life insurance in all analysed countries in the same period.
2. On the other hand, the average value of HHI show that the insurance market in the region medium-concentrated, whereas with the CR4 life insurance segment stands out as the most concentrated.
3. According to the criteria of development of the total earned premium and non-life insurance premium recorded a downward trend in the average value of the level of concentration in the analysed region, which is still moving in the range of medium concentrated market.
4. In the regional insurance market, there is uneven distribution of market share which is confirmed by the average value of G (about 0.6 under all three analysed criteria).
5. When it comes to the average values obtained for RE in the reporting period, we can say that they are located in a zone that is closer to the relative uniformity and equality of insurance companies in the analysed period.
6. The variations between the countries analysed in the analysed period are relatively stable.

The data in Table 6 show ranks countries according to some indicators of concentration in the insurance sector according to the criteria overall earned insurance premiums in 2007 and 2012. Rank 1 is the highest level of concentration, while rank 8 represents the lowest level of

Table 5: Coefficient variation of G (in %)

Coefficient of variations of each country in the period 2007-2012				Coefficients of variation between countries by each year			
Country	Total earned premiums	Total earned non-life premiums	Total earned life premiums	Year	Total earned premiums	Total earned non-life premiums	Total earned life premiums
SRB	2.5	3.7	4.2	2007	11.0	15.5	22.9
CRO	1.4	1.7	13.6	2008	11.9	15.4	17.8
BIH	2.8	2.9	7.8	2009	12.1	15.1	23.1
MNE	8.2	23.1	16.5	2010	14.0	17.8	24.4
FYRM	25.6	15.8	34.3	2011	15.3	20.3	21.9
ROU	1.9	2.8	3.3	2012	15.5	19.9	9,9
BLG	3.7	7.3	8.0				
ALB	7.6	6.8	22.5				

concentration in the market. Based on these results we can conclude that the insurance market in BiH (where prevail Ranks 8 and 7) at least concentrated market. On the other hand, the highest concentration levels were recorded on the MNE (on which is the most rank 1) and SRB insurance market (rank 2).

The data in the table below provide an overview of changes ranks countries according to individual indicators levels of concentration in the insurance sector, using the criteria of total earned premiums in the surveyed countries in the analysed period. We can notice that in the insurance sector are present significant changes in rankings of countries according to their level of concentration. In particular, the most noticeable changes are at the G and RE, while with the other hand at least changes observed in HHI and E. Observed by countries, the largest number of changes to the ranks of some indicators of concentration was recorded in the insurance market of ALB, while on the other hand at least oscillations rankings visible on the BLG insurance market.

H1 was partially confirmed due to the fact that the results obtained in terms of CR4 suggest the existence of

an average of the high level of concentration, while HHI indicates that the insurance market in the region is medium concentrated. Indicators of inequality of distribution of market shares (G) indicate the existence of significant disparities in the distribution of market shares. The results obtained on the basis of RE indicate the fact that we can talk about a state that is closer to the relative uniformity.

This is carried out empirical analysis of concentration in the insurance sector represents the initial step for the analysis of the entire financial system in the region. Obtained levels of concentration in the insurance sector point to the current market conditions in the countries studied. The fact is that analysed the financial sector is trying to use a limited and still under-developed and regulated financial markets in the region in order to achieve higher margins. The significant fact for the insurance sector is that leaders often operate to the detriment of the insured earning higher profits. This is best seen in the case of unfavourable business conditions and underdeveloped product range when it comes to the segment of insurance, especially life. However, it isn't desirable to restrict the movement of the market leaders, but it is necessary to monitor their activities

Table 6: Ranks of the countries according to concentration indicators on insurance market in terms of total earned insurance premium

Year	2007					2012				
Country/Indicator	CR4	HHI	E	RE	G	CR4	HHI	E	RE	G
SRB	2	2	2	2	2	2	3	3	1	1
CRO	4	4	5	4	4	4	4	5	3	3
BIH	8	8	8	8	7	7	8	8	7	6
MNE	1	1	1	1	3	1	1	1	2	4
FYRM	3	5	4	6	6	5	5	4	8	8
ROU	7	7	7	3	1	6	7	7	4	2
BLG	6	6	6	5	5	8	6	6	5	5
ALB	5	3	3	7	8	3	2	2	6	7

Table 7: Changes of concentration indicators' ranks in insurance sector in terms of total earned insurance premium comparing years 2012 with 2007

t	CR4	HHI	E	RE	G
SRB	=	+1	-1	+1	-1
CRO	=	=	=	+1	-1
BIH	-1	=	=	-1	-1
MNE	=	=	=	-1	+1
FYRM	+2	=	=	-2	+2
ROU	-1	=	=	+1	+1
BLG	+2	=	=	=	=
ALB	-2	-1	+1	+1	-1

and prevent the abuse of market position by controlling the regulatory authorities. In other words, it does not mean that the establishment of dominant positions on the market is automatically unfavoured market situation, if there is a strong state regulation that reacts to every kind of abuse of dominant position (Aćimović, 2008). In addition, we must not omit the fact that the enlargement of the capital in the financial sector leading to increased efficiency and it does not necessarily lead to an increase in the level of concentration. In addition to these criteria, there are other moments that influence the level of concentration, which were not the subject of our research (institutional barriers, geographical barriers to enter the market, the cost of replacement products, capping prices, product differentiation, and other criteria).

5.2 Testing of H2

To verify this hypothesis we use the following indicators of concentration CR4, HHI, G, E and RE. Analyses of the insurance sector begin to statistics based on criteria total earned insurance premium in the analysed group of countries in the region. The results show that in the insurance sector, it can't be claimed that the analysed concentrations indicators are correlated highly with each other. In other words, in the empirical analysis we can't rely only on individual indicators of concentration, but we need a comprehensive look at all the indicators since the concentration between the indicators there are differences in the strength

of the correlation. There was a statistically significant positive correlation with the materiality threshold of 0.01 between the CR4 and HHI (0.853) and statistically significant negative correlation with the materiality threshold of 0.01 between the HHI indicators and E (0.926), CR4 and E (-0.893), as and G and RE (-0.855).

In order to have a clearer picture of the insurance market in the analysed countries in the region, it is necessary to analyse the concentration of indicators to supplement the subjective assessment of the nature of the market and the relationship between competitors on it. The insurance markets in the analysed countries in the region have several common characteristics:

1. All parameters of development (gross premiums, penetration and insurance density) indicate that the region lags behind developed countries. Historically the structure of the portfolio in the region we analysed is in the favour of non-life insurance segment.
2. When it comes to the number of participants in the insurance market in SEE countries, over the past six years have not recorded excessive fluctuations. What is unique for the region is the fact that a larger number of insurers operating in the segment of non-life insurance as a result of the lack of citizens' awareness of the importance of life insurance.
3. Prior to the adoption of the Law on Insurance, insurance market in countries in the region was characterized by unfair competition and the small number of insurance products. The harmonization of legal acts

Table 8: The Pearson correlation coefficient in the insurance sector (according to the criteria of total insurance earned premiums)

		CR4	HHI	G	E	RE
CR4	Pearson Correlation	1	.853**	.168	-.893**	-.512**
	Sig. (2-tailed)		.000	.254	.000	.000
	N	48	48	48	48	48
HHI	Pearson Correlation	.853**	1	.255	-.926**	-.668**
	Sig. (2-tailed)	.000		.080	.000	.000
	N	48	48	48	48	48
G	Pearson Correlation	.168	.255	1	-.035	-.855**
	Sig. (2-tailed)	.254	.080		.816	.000
	N	48	48	48	48	48
E	Pearson Correlation	-.893**	-.926**	-.035	1	.490**
	Sig. (2-tailed)	.000	.000	.816		.000
	N	48	48	48	48	48
RE	Pearson Correlation	-.512**	-.668**	-.855**	.490**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	48	48	48	48	48

** . Correlation is significant at the 0.01 level (2-tailed).

with the EU member states as well as the establishment of supervisory authorities impacted the interest of foreign investors for insurance market of SEE countries.

4. The process of privatization in the region is carried out differently in the analysed countries and it is visible on the basis of the level of concentration. Thus, the countries in the region that are cautiously entered the process of transformation of ownership managed to keep the national insurers. On the other hand, countries that have allowed the privatization of national insurers with the largest market share now have about 15% share in the segment of non-life insurance (in the case of MNE and FYRM).
5. The main motive for foreign investors in this market is underserved market of insurance, provided the opportunity to develop primarily due to low insurance premiums per capita and low participation of gross premium in GDP.
6. The macroeconomic environment in which insurance companies operate is the result of how the socio-economic crisis in the countries in the region and the world financial crisis.

Unlike financial systems that have been developed and stable insurance sector (in particular segment life insurance), this part of the financial system is still under development in the analysed countries. The experience of countries with stable and strong financial sector shows that after the development of the banking sector stronger insurance sector. Based on these data we can conclude that the major changes in the level of concentration in the forthcoming period, likely in the insurance sector, particularly in the segment of life, compared with the banking sector, which has for years in the analysed region is saturated.

5.3 Testing of H3

H3 verified using the following indicators of concentration CR4, HHI, G, E and RE (which will be analysed on the basis of total insurance earned premiums), which are placed in a relationship with an indicator of economic development (GDP pc). H3 will be verified by application of *Spearman's correlation coefficient* in 2007 and in 2012. The following table provides an overview of GDP pc in the analysed countries in 2007 and 2012, ranks countries as well as indices of development of countries (least developed country = 100). Based on the data we can notice that ALB had the lowest level of economic development (index of 100); while CRO recorded the highest level of GDPpc (index 372 in 2007 and 300 in 2012).

Validity of H3 is continued by analysing the insurance sector in selected countries in the region, based on the criteria the total earned insurance premiums in 2007 and 2012.

The obtained results of Spearman's correlation coefficient confirm H3 i.e. the level of concentration of poorly correlated with the level of economic development as it is in all cases (except G in 2007, which was the only statistically significantly correlated with GDP pc) recorded correlations that are in the zone of lower value. It can be concluded that the analysed countries are on relatively similar level of development but they have significantly different levels of concentration in the insurance sector. Although at different levels of development, some countries had similar levels of concentration.

In the first case, when we talk about relatively similar levels of development and different level of concentration we can take for example the insurance market (measured by the criterion of total earned insurance premiums) in BiH and ALB. Whereas in these two countries in 2012 measured nearly identical GDP pc recorded significant differences in the level of concentration. In the case of CR4 in BiH had a value of 38%, while in the ALB was as much as 68%. In addition, HHI insurance market in BiH catego-

Table 9: GDP pc (in USD), rank and index in 2007 and 2012. Source: World Bank, authors' calculation

	2007	Rank	Index (the least developed country =100)	2012	Rang	Index (the least developed country =100)
SRB	5.458	5	150	5.666	5	129
CRO	13.540	1	372	13.235	1	300
BIH	3.991	6	110	4.410	7	100
MNE	5.946	3	163	6.514	4	148
FYRM	3.892	7	107	4.548	6	103
ROU	8.170	2	225	8.437	2	191
BLG	5.783	4	159	7.198	3	163
ALB	3.639	8	100	4.406	8	100

Table 10: Spearman's correlation coefficient between the concentration ratios in the insurance sector (according to the criteria of total earned insurance premiums) and GDP pc

*. Correlation is significant at the 0.05 level (2-tailed)

2007			2012		
GDPpc			GDPpc		
CR4	Correlation Coefficient	.048	CR4	Correlation Coefficient	-.119
	Sig. (2-tailed)	.911		Sig. (2-tailed)	.779
	N	8		N	8
HHI	Correlation Coefficient	.000	HHI	Correlation Coefficient	-.119
	Sig. (2-tailed)	1.000		Sig. (2-tailed)	.779
	N	8		N	8
G	Correlation Coefficient	.738*	G	Correlation Coefficient	.643
	Sig. (2-tailed)	.037		Sig. (2-tailed)	.086
	N	8		N	8
E	Correlation Coefficient	.143	E	Correlation Coefficient	.238
	Sig. (2-tailed)	.736		Sig. (2-tailed)	.570
	N	8		N	8
RE	Correlation Coefficient	-.643	RE	Correlation Coefficient	-.524
	Sig. (2-tailed)	.086		Sig. (2-tailed)	.183
	N	8		N	8

rized as poor are concentrated (with 640 points), while it cannot be said of the insurance market in the ALB in which the measured concentration of 1,640 points.

In the second case, we are talking about countries with different levels of development that have similar levels of concentration, we can analyse CRO and FYRM insurance market in 2012. Statistical data show that in 2012 CRO was economically significantly more developed than FYRM (ratio 2.9 GDP pc : 1). However, the concentration ratio values obtained show that in the countries analysed recorded a similar level of concentration. So CR4 shows values of 51% and 60% FYRM the CRO, while HHI values for medium-concentrated market (1,000 and 1,300 in FYRM and CRO, respectively).

6 Conclusion

Based on the conducted empirical research the authors came to the following conclusions:

- CR4 indicates a high level of average concentrations of all analysed criteria of development of the insurance sector.
- HHI indicates that the regional insurance market is medium concentrated, except in the case of life insurance, which belongs to the group highly-concentrated markets.
- Regional insurance sector is characterized by a high degree of unevenness in the distribution of market

shares between individual participants (G values).

- RE values are located in a zone that is closer to the relative uniformity and equity businesses.
- The average level of concentration and inequality in regional insurance sector stagnated during this period.
- The insurance market in BiH, ROU and BLG is the least concentrated market, while highly concentrated markets are SRB and MNE.
- In the regional insurance sector are present significant changes of countries' ranks according to the level of concentration in the region. In particular, the most noticeable changes are at G and RE, while with the other hand at least changes observed in HHI and E. Observed by countries, the largest number of changes to the ranks of some indicators of concentration was recorded in ALB insurance market, while on the other hand at least oscillations rankings visible in BLG insurance market.
- The results showed that the analysed concentration indicators in the insurance sector confirmed that there were differences in the level of correlation and therefore, in order to gain a realistic idea about the state of the level of concentration and forecast future movements necessary integral observation and analysis of several indicators of concentration, thus avoiding the adoption of conclusions only on the basis of a forward movement of chosen concentration indicator.

- In all observed indicators of concentration in relation with the density level GDP pc move in the zone of very low value, which on the one hand points to the fact that the analysed countries at a relatively similar level of development have significantly different levels of concentration, but also on the fact that some countries although at different levels of development, have similar levels of concentration.

Future research will cover a longer period of time until the end of 2016, to determine whether the same findings could be applied in the future, or that you will appear in the insurance market by competitors from other industries that would significantly change the picture of concentration, or quality and sophistication of insurance products.

References

- Aćimović, S. (2008). Dominant Positions in the Market-Problem or Not? In Drašković, B., Vuković, V. (eds.). *Market Structure and Competitiveness Protection, Experiences from the Transition Countries*, Belgrade, Institute of Economic Sciences, pp. 33-45.
- Albanian Financial Supervisory Authority (2007-2012). *Insurance Geography Statistical Report (2007-2012)*. Retrieved from: <http://www.amf.gov.al/statistika.asp?id=1&s=1>
- Athanasoglou, P.P., Delis, M.D., & Staikouras C.K. (2006). *Determinants of Bank Profitability in the South eastern European Region*. Bank of Greece, Working paper No. 47.
- Beck T., Demirgüç-Kunt A, Levine R. (2003). Bank concentration and crises, NBER working paper No. 9921.
- Bikker, J.A., & Haff, K. (2000). *Measures of Competition and Concentration in the Banking Industry: a Review of a Literature*. De Nederlandsche Bank, Research series supervision No. 27.
- Bikker J.A., & Haff K. (2001). Competition, concentration and their relationship: An empirical analysis of the banking industry, DNB staff report No.68, De Nederlandsche Bank.
- Chamberlain E. (1929). Duopoly: Value where sellers are few, *Quarterly Journal of Economics*, 43, pp. 63-100.
- Croatian insurance bureau (2007-2012). *Insurance market in the Republic of Croatia (2007-2012)*. Retrieved from: <https://www.huo.hr/eng/publications/50/>
- Ćurak, M., Poposki, K., & Pepur, S. (2012). Profitability Determinants of the Macedonian Banking Sector in Changing Environment. *Procedia - Social and Behavioral Sciences*, 44, pp. 406-416, <https://doi.org/10.1016/j.sbspro.2012.05.045>
- Dimić M. (2015). *Analysis of concentration level in banking and insurance sector in SEE countries*, PhD dissertation, Singidunum University, Belgrade
- Dimić M., Barjaktarović L. (2017). *Ownership transformation of the banking sector in SEE countries*, *Bankarstvo Journal*, Vol. 46, No.1, pp.84-103.
- Dumičić, K., Pavković, A., & Akalović-Antić, J. (2012). Measuring the concentration in banking in the Republic of Croatia, *Proceeding of the Faculty of Economics and Business in Zagreb*, 10(2), pp. 117-136.
- Financial Supervision Commission in Bulgaria (2007-2012). *Statistics for the Non-life and Life Insurance Companies (2007-2012)*. Retrieved from: <http://www.fsc.bg/en/markets/insurance-market/statistics/>
- Hall, M. & Tideman, N. (1967). Measures of Concentration. *Journal of the American Statistical Association*, 62, pp. 162-168, <http://dx.doi.org/10.2307/2282919>
- Hall R. & Hitch C. (1999). Price theory and business behavior, *Oxford Economic papers*, 2, pp. 12-145.
- Hawkins, J., & Mihajlek, D. (2001). *The Banking Industry in the Emerging Market Economies: Competition, Consolidation and Systemic Stability*, BIS Paper No.4. Retrieved from: <http://www.bis.org/publ/bppdf/bispap04a.pdf>
- Insurance Agency of BiH (2007-2012). *BiH Insurance Market Statistics (2007-2012)*. Retrieved from: http://www.azobih.gov.ba/cms/index.php?option=com_content&task=view&id=92&Itemid=71
- Insurance Europe (2014). *European Insurance in Figures (Januar-Februar 2014)*. Retrieved from: <http://www.insuranceeurope.eu/search/type/Publication>.
- Insurance Information Institute (2010-2011, 2013-2014). *International Insurance Fact Book (2010-2011, 2013-2014)*. Retrieved from: <http://www.iii.org/publications>
- Insurance Supervision Agency of Montenegro (2007-2012). *Report on Insurance Market in Montenegro (2007-2012)*. Retrieved from: http://www.ano.me/en/index.php?option=com_phocadownload&view=category&id=2:&Itemid=69
- Insurance Supervision Agency Republic of Macedonia (2009-2012). *Report on the Scope and Content of the Insurance Operations (2009-2012)*. Retrieved from: http://www.aso.mk/index.php?option=com_fjrelated&view=fjrelated&id=0&Itemid=91&lang=en
- International Monetary Fund (IMF) (2010, 2013). *World Economic Outlook (2010, 2013)*. Retrieved from: <http://www.imf.org/external/pubs/ft/weo/2013/02/>
- Kostić, M. (2008). Measurement of Industrial Supply Concentration. *Economic Horizons*, 10 (1), pp. 89-108. Retrieved from: http://www.horizonti.ekfak.kg.ac.rs/sites/default/files/Casopis/2007/6_Milan_Kostic.pdf
- Kraft E. (2007). What is the level of concentration in the banking sector of Croatia? Retrieved from <http://www.hnb.hr/publikac/istrazivanja/i-019.pdf>
- Kundid, A., Škrbić, B., & Ercegovac, R. (2011). Determinants of Bank Profitability in Croatia. *Croatian Operational Research Review (CRORR)*, 2, pp. 168-182.
- Lipczynski, J., & Wilson, J. (2001). *Industrial Organisation- an Analysis for Competitive Markets*. Harlow: Prentice Hall.
- Ljubaj, I. (2005). *Concentration Indicators of Banking Sector in the Republic of Croatia*. Croatian National Bank.

- Marinković, S. (2007). The Industrial Concentration in Serbian Banking: The Degree and its Dynamics. *Economic Themes*, 31(2), 283-299. Retrieved from: <http://teme2.junis.ni.ac.rs/public/journals/1/previousissues/teme2-2007/teme2-2007-06.pdf>
- Martin, S. (2002). *Advanced Industrial Economics*. Oxford, UK: Blackwell Publishers Ltd.
- Mc Conell, C.R., & Brue, S.L. (1996). *Microeconomics-Principles, Problems and Policies*. London: McGraw Hill Inc.
- Miljković M., Filipović S. & Tanasković S. (2013). Market concentration in the banking sector – Evidence from Serbia, *Industrija*, 41 (2), 7-25.
- National Bank of Serbia (2007-2012). *Insurance Supervision, Insurance Sector Reports (2007-2012)*. Retrieved from: http://www.nbs.rs/internet/english/60/60_6/index.html
- National Bank of Serbia (2016). *Insurance Supervision, Insurance Companies Operations, Total Insurance Premium by Insurance Companies and Types of Insurance*. Retrieved from: http://www.nbs.rs/internet/english/60/60_2/index.html
- Njegomir, V., & Stojić, D. (2011). Liberalisation and Market Concentration Impact on Performance of the Non-life Insurance Industry: The Evidence from Eastern Europe, *The International Association for the Study of Insurance Economics 1018-5895/11, The Geneva Papers*. 36 (1), pp. 94- 106, <http://dx.doi.org/10.1057/gpp.2010.32>
- Organization for Economic Co-operation and Development (OECD) (2011). *The Impact of the Financial Crisis on the Insurance Sector and Policy Responses*. Retrieved from: <http://www.oecd.org/daf/ca/corporategovernanceprinciples/theimpactofthefinancialcrisisontheinsurancesectorandpolicyresponses.htm>
- Romanian Insurance Supervisory Commission (2012). *Report on the Romanian Insurance Market and the Insurance Supervision in 2012*. Retrieved from: <http://asfromania.ro/en/>
- Stojanović, B., Stanišić, T., & Veličković, M. (2010). Problem zaštite konkurencije u trgovini na malo u Srbiji. *Škola biznisa*, 3, pp. 57-66. Retrieved from: <http://www.vps.ns.ac.rs/SB/2010/3.7.pdf>
- Swiss Re, Sigma (2007-2012). *Insurance Research. World Insurance*. Retrieved from: <http://institute.swissre.com/research/overview/>
- Sweezy P. (1939). Demand under conditions of oligopoly, *Journal of Political Economy*. 47, pp. 468-473, <https://doi.org/10.1086/255420>
- Šubić, R. (2009). Role of Foreign Banks in Integration of Banking Industry. *Economic Journal*, 22(2), pp. 296-313.
- Zingales L., Raghuram R. (2003). Banks and Markets: The Changing Character of European Finance, *NBER Working Paper No. 9595*

Maja Dimić is an Assistant Professor at the Faculty of Business Studies and Law, University Union Nikola Tesla in Belgrade. Her major research interests concern economics, finance, insurance and banking sector. She teaches on undergraduate, master and doctoral level. She is author of chapters in books and articles in scientific and professional journals, published in Serbia and abroad.

Lidija Barjaktarović has a PhD in Economic Sciences in sectors banking and finance. At the University Singidunum in Belgrade she teaches Banking, Risk Management and Corporate Finances (from 2008). She has been Head of master study programs Business Economics and Public Sector Management at Singidunum University since 2014. She had banking career in the period from 1998 to 2008. It started in Jugobanka A.D. Belgrade, after which she moved to Societe General Yugoslav Bank a.d. Belgrade, and then to Raiffeisen Bank a.d. Belgrade in order to be promoted to the Head of the Regional Branch Central Serbia. In 2005 she moves to Erste Bank a.d. Novi Sad to become the Director of Corporate Division. At the end of 2007 Erste Group names her to be a member of the Corporate Board and Corporate Working Group on the level of the Erste Holding Vienna.

Olja Arsenijević, is full professor at the Faculty of Business Studies and Law in Belgrade »Union Nikola Tesla« University. Her major research interests concern management, education, marketing and safety issues. She has published several monographs, several research papers in domestic and international journals and presented her research work at many national and international conferences.

Polona Šprajc is an Associate Professor at the Faculty of Organizational Sciences, University of Maribor. Her main research interests are human resource management, marketing and business ethics.

Janez Žirovnik, master of law sciences and doctoral candidate, is a judge of the civil department of the district court in Maribor. He is also a senior lecturer at the Faculty of Logistics of University of Maribor and participates in the research and pedagogical process at the Faculty of Organisational Sciences University of Maribor in the areas of business and commercial law and crisis management.

Merjenje koncentracije zavarovalnega sektorja - primer jugovzhodnih evropskih držav

Namen: Namen prispevka je bil ugotoviti stopnjo koncentracije v zavarovalnem sektorju na osnovi kazalnikov v naslednjih osmih državah južne in vzhodne Evrope (Srbija, Hrvaška, Bosna in Hercegovina, Črna gora, Nekdanja jugoslovanska republika Makedonija, Romunija, Bolgarija in Albanija) v obdobju od leta 2007 do leta 2012.

Metodologija: V tem kontekstu so bili analizirani kazalniki koncentracije: tržni delež štirih vodilnih finančnih institucij (CR4), indeks Herfindahl-Hirschman (HHI), koeficient entropije (E), koeficient relativne entropije (RE) in Gini koeficient (G). Kazalniki koncentracije so zgrajeni z uporabo ustreznih meril za razvoj zavarovalnih sektorjev (skupne zaslužene premije, premije ne premoženjske premije in skupne življenjske premije). Cilj analize podatkov je bil določiti raven vsakega indikatorja koncentracije v zavarovalnem sektorju v analiziranih državah in izračunati njihovo variabilnost v obdobju 2007-2012.

Rezultati: Študija je pokazala, da so zavarovalniški sektorji v analiziranih državah v povprečju visoko koncentrirani (po kazalcu CR4), srednje koncentrirani (po HHI) z visokimi ravni neenakosti razdelitve tržnih deležev med posameznimi udeleženci (glede na koeficient G) in v območju relativne enotnosti in enakosti poslovnih subjektov (glede na RE koeficient). Rezultati raziskav kažejo, da obstoj različnih ravni korelacije med analiziranimi kazalniki koncentracije v zavarovalnem sektorju potrjuje sklep, da je za pridobitev ustreznih in kakovostnih sklepov o ravni koncentracije treba pregledati in integralno analizirati več indikatorjev koncentracije. Poleg tega so raziskave pokazale, da imajo države s sorazmerno podobnim nivojem razvoja (merjene z ravno bruto domačega proizvoda na prebivalca) bistveno drugačne ravni koncentracije, medtem ko imajo nekatere države na različnih ravneh razvoja sorazmerno podobne ravni koncentracije, zaradi česar je težko govoriti o modelu koncentracije, ki bi bil značilen za ustrezno raven razvoja.

Zaključek: V vseh opazovanih kazalnikih koncentracije glede na intenzivnost ravni BDP-ja, se pc gibljejo v območju zelo nizke vrednosti, kar na eni strani kaže na dejstvo, da imajo analizirane države pri sorazmerno podobni ravni razvoja, bistveno drugačne ravni koncentracije, pa tudi na dejstvo, da imajo nekatere države, čeprav na različnih ravneh razvoja podobne ravni koncentracije. Prihodnje raziskave bodo zajemale daljše obdobje do konca leta 2016, da bi ugotovili, ali bi se lahko v prihodnosti uporabljale enake ugotovitve ali se bodo na zavarovalnem trgu pojavili konkurenti iz drugih industrij, ki bi znatno spremenili sliko koncentracije ali kakovost ter prefinjenost zavarovalnih produktov.

Ključne besede: zavarovalni sektor; nivo koncentracije; kazalniki koncentracije; jugovzhodne evropske države

DOI: 10.2478/orga-2018-0005

Sustainability and Sustainability Marketing in Competing for the Title of European Capital of Culture

Valentina BURKSIENE, Jaroslav DVORAK, Gabriele BURBULYTE-TSISKARISHVILI

Klaipeda University, Department of Public Administration and Social Geography, Klaipėda, Lithuania
v.burksiene@gmail.com, jaroslav.dvorak@ku.lt, gabriele.burbulyte@gmail.com

Background and Purpose: An analysis of the dimension of sustainability in the context of competing for the title of the European Capital of Culture (ECoC) is included in the article. The authors of the research agree that the proper integration of cultural policy into the social system impacts and changes cultural values and beliefs, shifting them towards sustainable behaviour and sustainability. Many authors analyse the interrelation between culture and sustainability, thus defining the role of culture for sustainability. However, few discuss possible approaches or tools, which may offer assistance in the matter of how to reach sustainability in the context of culture.

Design/ Methodology/ Approach: Research is based on the comparative analysis of the applications of the respective cities. The TBL methodology is implemented using the content analysis method as a tool. The outcomes of the content analysis are then used for the elaboration of the qualitative multi-attribute model using the DEX methodology.

Results: While analysing bidding documents for the ECoC we: a) define the importance of the marketing plan (described as a comprehensive action) and b) argue that ECoC marketing needs to be turned to “*sustainability marketing*” as it is described and defined by many authors.

Conclusions: The ECoC Commission should consider the importance of culture for sustainable development and, respectively, should evaluate the marketing plan of applicants under the sustainability framework.

Keywords: culture; European Capital of Culture; marketing; sustainability; sustainability marketing

1 Introduction

Culture undoubtedly affects sustainable development, as has been acknowledged by many authors (Hawkes, 2001; Nurse, 2006; Fithian and Powell 2009; Maraña, 2010; Scammon, 2012; Sazonova, 2014; Immler and Sackers, 2014; Dessein, Soini, Fairclough and Horlings, 2015). Moreover, culture could be treated as a key element for the concept of sustainable development (Opuku, 2015), capable of linking different areas of policy (Dessein et al., 2015). The European Union, for this reason, developed the Programme of *The European Capital of Culture (ECoC)*, hereafter – *the Programme*) which is arguably one of the most successful of all cultural projects (Lamza – Maronic et. al, 2011). It is strongly believed that the *ECoC* initiative significantly maximises social and economic benefits, especially when the events are embedded as part of a long–

term culture-based development strategy of the city and the surrounding region.

The integration of cultural activities of the Programme should develop links between different domains (e.g. culture, education, tourism, territorial planning, social services, etc.) and help to build sustainable partnerships with economic and social sectors. According to Dessein et al. (2015, p.44) “*culture is a key factor in the adaptation and learning new practices*”. Chiu et al. (2010) state that people act on the beliefs and values they perceive to be widespread in their culture.

Marketing, therefore, appears to play a not insignificant role in the competition for the title, while there is a requirement pertaining to the integration of the *ECoC* project into the common strategic plan of the city and of its appropriate marketing. As Van Aalst and. Van Melik (2012) note, municipalities look for the opportunity to

implement mega-events. Despite the fact that marketing is defined as an obligatory action for the *ECoC* project and that marketing costs should be planned in the budget and approved by the awarding Commission, Lamza–Maronić et al. (2011) have revealed the huge discrepancy in the marketing budgets of the respective candidate cities, as well as the means/tools of promotion [advertising]. In this way, city governments compete in the performance of their duties and provide public value for citizens. Appropriate marketing facilitates communication of the *ECoC*, not only during the designated year but in the preparatory period as well. Marketing success relates to the choice of the appropriate audience.

If culture is perceived to be so important for sustainable development, *why then could marketing not be the means of spreading the idea of sustainability within a particular society or even shifting (transforming) that society towards the sustainability paradigm?* The role of *social marketing* in changing individual or societal values, beliefs and behaviour has been defined by authors such as Thaler and Helmig (2013), Senkus (2013), Pykett et al. (2014), and Wróblewski (2016) among others. The marketing strategy of the *ECoC*, thus, should also include social or even sustainability aspects (complex interlinks between social, environmental/ecological and economic dimensions). *Sustainability marketing* criteria, however, are still missing from the current applications and reports and are thus the main focus of this article.

We argue that the variety of applied marketing approaches for the management and implementation of such a complex event as the *ECoC* should consider *sustainability marketing* as it is defined by Belz and Karstens (2005), Peattie and Belz (2010), Nkamnebe (2011), Rakic and Rakic (2015), Lim (2016) and others. The requirement for *sustainability marketing* should be added to the criteria by the respective Commission of the *ECoC* and evaluated while choosing the winner. Marketing tools that could foster any city's sustainability should compulsorily be planned in the preparation period and displayed in the application (bidding) forms of the candidate cities.

Sustainability, according to *complexity theory*, is defined as a complex system (Peter and Swilling, 2014). *Sustainability marketing* as a process includes economic, environmental, social, ethical, and technological dimensions (Lim, 2016) proving its complexity as well. This allows one to argue that marketing in terms of the *ECoC* should be based on and evaluated using the *Triple Bottom Line* approach (TRB, *further – the Approach*). The Approach is explained in detail by numerous authors, starting with John Elkington in his 1997 book “*Cannibals With Forks: The Triple Bottom Line of 21st Century Business*”¹.

The case of Lithuania has been chosen to provide the

context for an analysis of the problem. The synergetic effect of culture and tourism plays a crucial role, both for economic growth and labour market development. Cultural tourism not only helps to protect cultural heritage, but also opens new prospects for collaboration among different sectors, creates attractive tourism products, and stimulates innovations (see Aubert et al., 2005). This is the reason why cultural tourism is distinguished as one of the primary spheres of Lithuania's development. Furthermore, a special measure dedicated to the protection of cultural heritage was funded by European Structural Funds in the period of 2007–2013. During the current EU structural funding period of 2014–2020, additional measures are planned resulting in the creation of cultural tourism routes and the promotion of the country's cultural tourism at an international level. Digital marketing is among the most funded priorities. However, the economic benefits of culture in Lithuania were not recognised by the Government until 2007 (Rindzevičiūtė et al., 2016)². Vilnius, the capital of Lithuania, became the first Lithuanian city awarded the *ECoC* title in 2009. An analysis (Nechita, 2015, p. 105) reveals that no Lithuanian cities had bid for the title of *ECoC* in the period of 2013–2019.

2 Cohesion of Culture, Marketing and Sustainability

Culture, according to Opuku (2015), could be treated as a key element for the sustainable development concept, while it is the bond capable of linking people's consciousness towards the built-up and the natural environment. Culture (in particular evolutionary culture) empowers people with the ability to understand the common world and its problems afresh. Culture can be considered as a sphere where individual and collective meanings are created with sustainable development as a core value (Sazonova, 2014). As the authors agree that sustainable development requires a holistic attitude and a systemic way of thinking, culture thus becomes an indispensable tool for integrating new values and new modes of life, a novel pathway for the development of economics. Moreover, authors depict culture as the core of the new paradigm of sustainable development and sustainability.

Soini and Dessein (2016) discussed the roles of culture in relation to sustainability and offered three framing representations of culture and sustainability (see Fig. 1). The three light circles represent three traditional sustainability pillars (*social, economic and ecological*) while the dark-grey circle represents culture. The first mode considers culture as if it were *the fourth pillar of sustainability*. The second mode refers to culture playing a mediating role in order to achieve *economic, social, and ecological sustain-*

1 https://www.mindtools.com/pages/article/newSTR_79.htm

2 That year the Minister of Culture approved the Strategy for the Promotion and Development of Creative Industries.

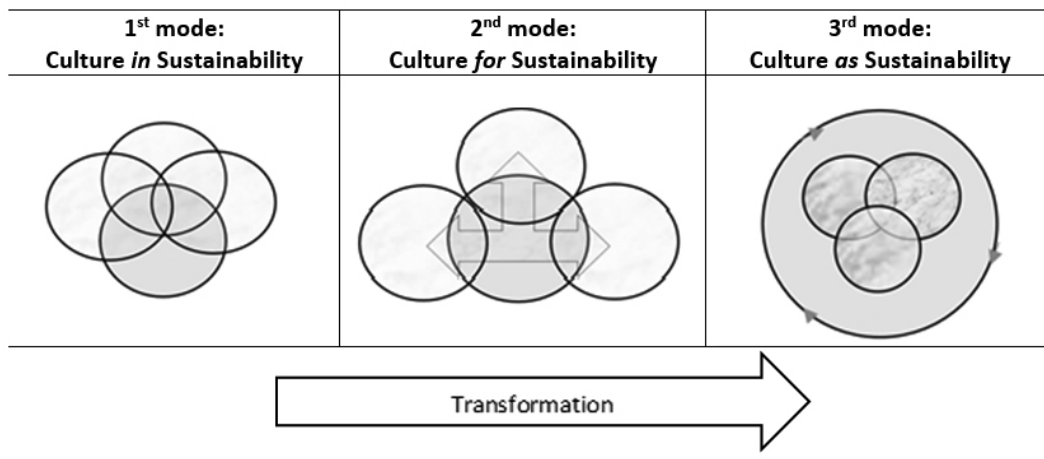


Figure 1: Shifting modes of culture – sustainability relations. Adapted from: Soini and Dessein (2016, p.6)

ability. The third mode considers culture as a necessary foundation for meeting the overall aims of sustainability. In other words, culture is “a part of a constantly evolving process aiming for transformation” (Soini and Dessein, 2016, p. 9).

According to Soini and Dessein (2016), moving from the first to the second and to the third mode is a must for the complex shift to sustainability. The ideal result of this shift would lead to: a) the shaped or reshaped meaning of nature, considering it as a constituent of culture; b) completely new policies that intrinsically accommodate sustainability principles; c) new modes of *self-governance* or even *meta-governance*. While addressing the direction of the transformation to sustainability and defining the relationship between culture and sustainability in eight dimensions, Soini and Dessein (2016) neither try to give an answer to the question of how to undertake transformation, nor provide the tools to do so.

Eroglu and Picak (2011), Greblikaite et al. (2016) provide a reminder that culture is perceived as a set of *shared beliefs, values, models of conduct, rules of coexistence and expected behaviours*. Sustainability is also related to *beliefs, values and behaviours* (Bell and Morse, 2003; Senge and Smith, 2008; Epstein, 2008; Edwards, 2009; Sazonova, 2014; Giltrow, 2015). Eroglu and Picak (2011, p.146) state “*deeply embedded and irrational shared values shape political institutions as well as social and technical systems, all of which simultaneously reflect and reinforce values and beliefs*”. While sharing the above view, we further argue that the impact of political decisions and actions is of crucial importance for sustainable development. Local and regional cultural policy can foster societal shifts towards sustainable behaviour, the participation of citizens and sustainable collective actions, or can even contribute to the transformation into a sustainable society. Cultural space is suitable for dialogues, creative approaches and

diversity. It allows new viewpoints for development and prevents sustainability from “*a frozen lifeless doctrine*” (Sazonova, 2014, p. 7).

Agreeing with scientists such as Thaler and Helmig, (2013), Senkus (2013), Pykett et al. (2014), and Wróblewski (2016), we state that social marketing is a very helpful approach for changing the values or behaviour of society. While the new mode – *sustainability marketing* – has evolved since the beginning of the 21st century, we argue that this type of marketing might be a useful tool for transformation to sustainability in the framework of culture policy. Social marketing is included in *sustainability marketing* as it represents a social dimension. Ecological / environmental / green marketing (see in Belz and Karstens, 2005; Peattie and Belz, 2010; Nkamnebe, 2011; Rakic and Rakic, 2015; Lim, 2016) represents the environmental dimension, and business marketing represents the economic dimension.

Sustainability marketing today is not something new or unknown to marketing experts. As with other research areas, marketing has developed while reacting to the sustainability issues which have emerged. This process has been defined, researched and analysed by many authors (see Belz and Karstens, 2005; Peattie and Belz, 2010; Nkamnebe, 2011; Rakic and Rakic, 2015; Lim, 2016). *Sustainability marketing* requires innovative (systemic) thinking of marketing managers and a long-term orientation (Peattie and Belz, 2010). According to Rakic and Rakic (2015), *sustainability marketing* is oriented towards the whole community, its social goals and the protection of the environment. It requires the engagement of national and local governments, organisations and population as well as the necessary capital (human, financial, infrastructural, etc.). A set of characteristics is related to *sustainability marketing* including economic, environmental, social, ethical, and technological dimensions (Lim, 2016) as well

as transformation potential of marketing activities (Peattie and Belz, 2010).

The above concepts need to be employed in practice by local, regional or national governments while announcing sustainability goals. We argue that the EU's interdisciplinary initiative of the *ECoC*, which integrates all three conceptual aspects (i.e. culture, sustainability and marketing), could play a significant role in fostering the idea of sustainability with more significant power.

3 The European Capital of Culture Programme

The political initiative of the *ECoC* has evolved greatly since its beginnings in 1985. It is strongly believed that the *ECoC* significantly maximises social and economic benefits, especially when the events are embedded as a part of a long-term culture-based development strategy of the city and the surrounding region.

The integration of the Programme into long-term city strategy is encouraged, as it has a sustainable impact on local economic, cultural and social development (Turşie, 2015). Therefore, most cities already emphasise long-term cultural, social and economic impact while bidding for the *ECoC* title (Nechita, 2015). The integration of the Programme into long-term strategies, furthermore, might foster polycentric spatial development involving peripheral (rural or former urban) areas around the bidding city and make them (and thus the entire area) more attractive for business investments, new inhabitants and tourists (Nemeth, 2010).

The real and responsible integration of the Programme in an overall development strategy could, according to Richards (2000, p.12), serve as a guard “*against the development of ‘festivalisation’ which threatens their cultural sustainability*”. This Programme, with its obligatory means of marketing, might also be perceived as a perfect outlet for the integration of different (complex) sustainability aspects into the development of the city.

Indeed, the value chain of cultural events with further commercialisation (e.g. *Consumer city* (Glaeser et al., 2001)) creates positive economic outcomes (for income and employment), but also meets with opposition (van Aalst and van Melik, 2012). There are authors (Aubert et al., 2015; Nechita, 2015; Draghici et al., 2015; Steiner et al., 2015) who emphasise several negative aspects or difficulties, such as the underestimation of costs and the overestimation of possible benefits; fewer comprehensive changes; difficulties in measuring the economic and social impact, the lack of long-term sustainability projects; a lack of finance to support the new cultural infrastructure both following the year of the *ECoC* and later from a long-term perspective; the negative effect on the wellbeing of the regional population, etc.

As announced by the Commission responsible for such matters (Commission staff working document, 2012): “the *European Union has a moral and legal obligation to take action to promote and safeguard cultural diversity*”, especially since the UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions came into force in 2007. All planned cultural events must reflect contemporary life, emphasising the unique culture and cultural heritage of the city. Each year two cities from the Member States are chosen to hold the title. According to Herrero et al. (2006), Boland (2010), Lamza–Maronić et al. (2011) and O’Callaghan (2012), the title awarded to the city creates the conditions for raising the international profile of a city; implementing programmes for cultural activities and art events; long-term cultural development; strengthening communications in the city; attracting domestic and foreign tourists; enhancing feelings of belonging and self-confidence; the growth and expansion of the local cultural audience; creating a festive atmosphere and new cultural facilities; urban redesign; and the regeneration, rebranding and repositioning of the city. The title, furthermore, may help with drawing “a new development path” if “struggling with an economic, social and identity crisis” (Aubert et al., 2015, p. 27) as well as the transformation of “the local population from the consumers of the city into creators of the city” (ibid, p. 28) or a shift to the concept of culture-led regeneration, which is stimulated by young organisers and entrepreneurs (Hudec and Džupka, 2016).

These obvious benefits (both economic and social) explain such a fierce battle for the title, for which the young democracies of the post-Soviet countries are also eager to bid. We see, therefore, Poland, Estonia, Romania, Slovakia, Bulgaria, Croatia, Hungary, and Lithuania (a total of 10 young democracy countries from 28 candidates overall in the period of 2020 – 2033) in the list of *ECoC* candidate countries (Lamza–Maronić et al., 2011). The “Melina Mercouri Prize” of 1.5 million Euro awarded by the Commission seems to be quite an attractive incentive for these countries.

4 *ECoC* regulation analysis

Sustainability requirements and progress evaluation

An analysis of the *ECoC* documents (application forms, studies and reports) reveal that the requirement of sustainability had not been included in primary documentation. Palmer’s report (Palmer/Rae Associates, 2004) states that local initiatives were more sustainable than those attracting large audiences, and most projects from the reporting period (1995–2004) are not sustainable over time. Respondents emphasised that, despite the huge levels of investment and activity, they rarely seem to have been matched by long-term development. The *ECoC* had not been part of a sustainable strategy for the city. Therefore, the advice arising

out of the Report includes recommendations to distinguish between short-term and longer-term impacts, to recognise the implications of approaches for maintaining sustainable initiatives, and to create sustainable programmes.

As a result, the Creative Europe Programme, which has replaced the above-mentioned Programme recently, already pays special attention to promoting *smart, sustainable* and *inclusive* growth while promoting European cultural diversity. Sustainability is considered to be a prerequisite for the new selection criteria. Applications from candidate cities need to be embedded in a long-term strategy for cultural development, and to include plans for building sustainable partnerships with the economic and social sectors (Commission staff working document, 2012).

The *Guide for cities preparing to bid* for the *ECoC* title in the period of 2020 – 2033 draws attention to the fact that successful *ECoCs* have used the title for general development producing sustainable cultural, social and economic impact. They embedded the programme's activities into the city's overall strategy, developing links between culture, education, tourism, territorial planning, social services, etc. (European Capitals of Culture, 2014). The potential candidates, therefore, are asked to show their cultural and city strategy in their bid-books as well as to have broad and strong political support and a sustainable commitment from the local, regional and national authorities (European Capitals of Culture, *ibid*, p. 11).

Marketing requirements and evaluation of progress

An analysis of the primary *ECoC* programme documents (the application form, studies and reports) show that despite the fact that there were no strict requirements for marketing the *ECoC* programme, "most of the host cities made considerable investment in marketing" (Palmer/Rae Associates, 2004, p. 128). The study by Garcia and Cox (2013) revealed that marketing strategies currently look more sophisticated and are usually treated as a priority which is supported by a significant part of the total budget.

However, the Palmer Report (Palmer/Rae Associates, 2004) states that cultural events were mostly not interrelated and, therefore, promoted separately as isolated events. This fragmentation of the cultural programme led to the lack of overall understanding of the programme in many *ECoCs*, which is why some respondents emphasised the importance of assigning more money to overall complex marketing, perceiving it (together with communication) as one of the priorities in the *ECoC*. No word of marketing regulation, however, is mentioned in the Commission staff working document of 2012 (Commission staff working document, 2012).

Some key inscriptions concerning marketing occur in the common Guide for cities preparing to bid (European Capitals of Culture, 2014, p. 22). Marketing and communication is perceived here as a key function, which seems to be treated as increasing online activity. The role of in-

forming wide audiences about *ECoC* as a comprehensive action of the Union is also seemingly allocated to marketing. However, it is followed by the only requirement noted – namely that "*The marketing and communication of the ECOC give due prominence to the ECOC as a European Union action*" (European Capitals of Culture, 2014, p. 23). Working relationships between the *ECoC* team and the marketing and tourism departments of the city are required. However, not a single word can be found on sustainability or sustainability marketing.

As already mentioned in this paper, marketing should comprise means which target both visitors and locals. While describing the outreach (European Capitals of Culture, 2014, p. 12), the Guide emphasises sustainability as a requirement or condition for the creation of new and sustainable opportunities for all citizens to be involved and attend cultural activities. Furthermore, the overall strategy for audience development, with links to education and schools' participation, is obligatory for applicants. The authors of this study argue that better conditions for *sustainability marketing* could hardly be found. All that is undoubtedly needed is to have a *sustainability marketing* orientation, which is common for *sustainability marketing* experts but usually unfamiliar to those who are responsible for bidding and implementing the *ECoC* programme.

5 Methods and procedures

Selection of the *ECoC* applications. For research purposes, the two candidate cities for the title of *ECoC* 2022 (Kaunas and Klaipėda) were chosen according to the following criteria:

- the former post-Soviet industrial cities are in transition, meaning that some developmental components are disappearing, paving the way for new ones;
- Lithuania's sustainable development strategy was renewed in 2009, meaning that the authorities of both cities should take care of the strategy's implementation issues;
- sustainable public finance of candidate cities for the *ECoC* title;
- both cities have experience in the coordination and sound organisation of big annual international events (e.g., *Kaunas Jazz festival*, *Klaipėda Jazz festival*, *Klaipėda Sea festival*, or *Hansa days in Kaunas*).

Vilnius, the capital of Lithuania, was awarded the title in 2009. In July 2015, six Lithuanian cities (Anykščiai, Jonava, Kaunas, Klaipėda, Plungė, and Rokiškis) submitted applications for the first stage. Finally, two cities – Kaunas (the 2nd largest city) and Klaipėda (the 3rd largest city) – competed for the title (Figure 2). Kaunas was chosen as most suitable for the award and will hold the title of the cultural capital of Europe in 2022.

National political support for the *ECoC* was provid-

ed through taking a decision at the national level on the amount of the financial contribution up to 50 percent of the programme budget (not exceeding 10 million euros, with no capital investment). Politicians from the Kaunas city and Kaunas district municipalities agreed on the programme budget of 16 million euros in total (12 million and 4 million euros, respectively). As for the Klaipėda city application, the three cities decided to allocate almost 16 million euros (the three cities of Klaipėda, Palanga, and Neringa sharing, respectively, 15 million, 700,000 and 243,000 euros). While the above figures show a similar contribution from the respective municipal budgets, the total amount for the overall implementation of the Programme, however, is not equally allocated (see Fig. 2).

Klaipėda planned to attract more funding from sponsors. From the previous title-winners' experience, this part of the budget usually ranges from 8% to 28% of the total budget (Milton Keynes Council, 2015).

Research methodology is based on the comparative analysis of the applications of the respective cities. The budgets of both candidate cities are compared, aiming to emphasise political attitudes to the ECoC and its marketing.

The category of *culture* is not included in the research as we agree with Sazonova (2014) and Soini and Dessein (2016) who consider culture as the foundation, basis or "space" for meeting the overall aims of sustainability. The category of *politics* is also excluded because the initiative of the ECoC itself is political in its origins. The political

aspect is a must according to the rules of the Programme.

For the implementation of comparative research, the *Triple Bottom Line* (TBL) methodology is used as the methodological foundation. The TBL is usually "used for measuring performance in relation to economic, social and environmental parameters" (Golob et al., 2015, p. 73). Research into *sustainability* and *sustainability marketing* (as these are systemic in their origins) can easily proceed while using the TBL methodology³ as the latter is based on the interrelation between the three main sustainability dimensions: social, ecological/environmental and economic, also defined as the "3P", i.e. People, Planet, Profit.

The TBL methodology is implemented using the content analysis method as a tool. The classical version of the content analysis is used while calculating the core words (*sustainability, ecology, marketing, sustainability marketing*) and analysing the context of the usage of *sustainability* and *sustainability marketing*. The following research structure is applied:

statements with the words *sustainable* and *sustainability* are counted and compared excluding the template phrases;

phrases related to sustainability aspects based on the "3P" categories are analysed, aiming to express and compare balance among all three dimensions of sustainability in both applications, including the category of *sustainability* as well. Specific subcategories have been chosen to count under each of the P's (see Table 1).

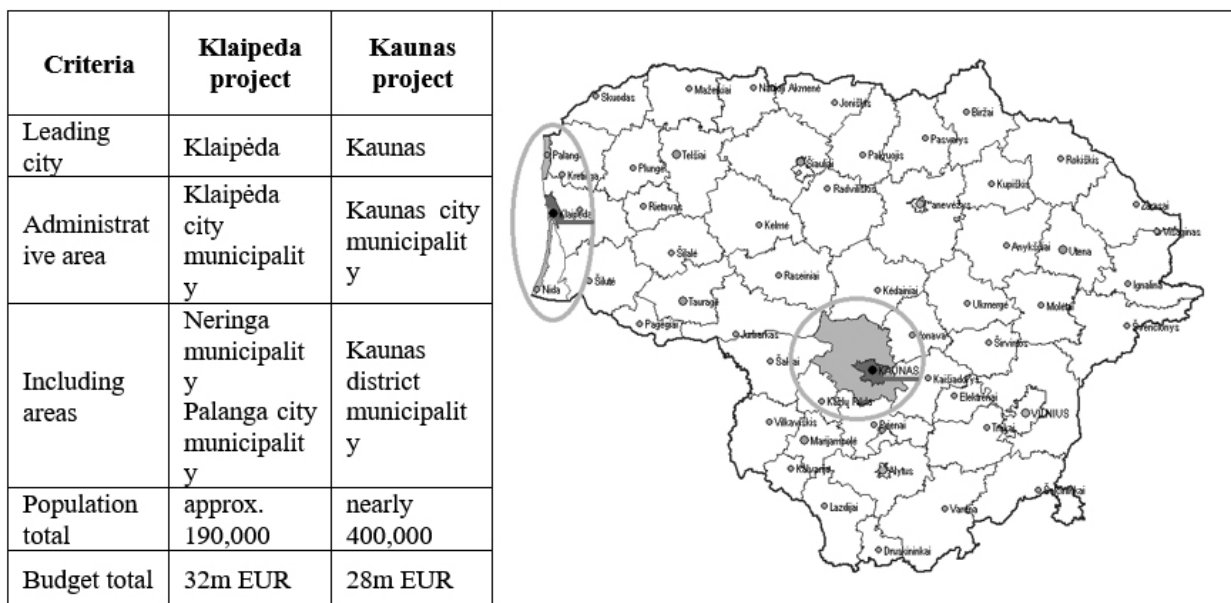


Figure 2. Lithuanian candidate cities for the ECoC 2022

3 https://www.mindtools.com/pages/article/newSTR_79.htm;
<https://link.springer.com/article/10.1007/s13520-012-0019-3#Sec3>

Table 1: Dimensions for analysis (own elaboration)

Sustainability dimension	Category	Subcategory
Social	People	society, community, residents, citizens, youth, women, grandparents, children, etc.
Environmental (ecological)	Planet	ecology, ecosystem, nature, natural environment, landscape, etc.
Economic	Profit	industry, industrial environment, economics, tourism, visitors, hospitality, employees, employers, etc.
Sustainability		

Table 2: Three-grade scale for assessment of an appropriate sub-attribute (own elaboration)

Score	Value
0-3	low
4-6	medium
7-10	high

The calculation of the categories and subcategories is implemented using the ATLAS.ti software programme (the programme calculates and displays the amount of each single word in both applications; all the words (sub-categories) related to every P are chosen subjectively by the authors). The results of the calculation are displayed and compared in the radar diagram.

The outcomes (data) of the content analysis are then used for the elaboration of the qualitative multi-attribute model using the DEX methodology. The model of sustainability marketing is based on theoretical definitions of the subject and following the recommendations of the DEX methodology as proposed by Bohanec (2015) and Golob et al. (2015). For this purpose, a primary hierarchical model of sustainable marketing (as a helpful tool for the decision-makers in the awarding procedure) is elaborated.

The model is based on qualitative variables while choosing a *core attribute*, *basic* and *aggregated* sub-attributes, and is tested for the evaluation of the marketing sections of the analysed applications. The three-grade scale is applied for the assessment of the presence of an appropriate sub-attribute or its equivalent (congruent in meaning). Due to the limited inscriptions (the largest number of statements in a single sub-attribute does not exceed 10) we chose to use a scale from 0 to 10 (as described in Table 2).

The model is developed using the DEXi software programme. The results are compared while displayed in the evaluation table that is composed using DEXi modelling.

Although TBL methodology allows organisations to rearrange their activities in a sustainable manner, there are some difficulties in measuring the impact they have on the social environment and nature (Slaper and Hall, 2011). TBL methodology has several limitations (Sridhar and Jones, 2013):

- social and environmental performance is unique in every situation and is difficult to quantify;
- it lacks the ability to aggregate the results across the three principles of TBL;
- the three separate accounts cannot easily be added up. It is difficult to measure *the planet* and *the people* in the same terms as *the profits*;
- it is more useful for business organisations.

An analysis with DEX methodology and the DEX-I programme also led to some limitations. The modelling of basic and aggregated attributes is limited to three as “*too many descendants cause a combinatorial explosion on the size of corresponding utility functions*” (Bohanec, 2015, p. 14). Therefore, the hierarchical model of *sustainability marketing* is based on the most important attributes (in our subjective understanding and choice). The limited options in the scale menu and recommendations such as “use the least number of values <...> two to four” limited the development of the *sustainability marketing* model as well.

6 Results

While analysing the applications of the candidates, it appeared that candidates have different goals while acting as the *ECOC* and implementing the associated cultural programmes. Kaunas treats the ability to create a unifying identity and to become a *contemporary capital* as the main goals, while Klaipeda, on the other hand, recognises itself as a *province* and wishes to return life to the city via cultural events. Both candidates mostly emphasise the *social dimension* and cultural needs for society.

Different models of initiation of the *ECOC* have been

copied by candidate cities year-by-year (Herrero et al., 2006). The previous experience of some other candidate cities (for instance, Cardiff) have shown that the rationale to take part in the competition is exclusively connected with marketing and born in the marketing department of the city (Griffiths, 2006). Kaunas' initiative to bid for the *ECoC* title, however, started from a group of various independent representatives. The group applied to the Kaunas city council and received unanimous support from the very beginning. As for the city of Klaipeda, the initiative for seeking the *ECoC* title had already been included in the "City Strategic Action Plan for 2013 – 2020". This imperative for successful participation has been used in the case of Liverpool, where local strategies were linked to the *ECoC* competition (Griffiths, 2006). The consistent orientation of the city of Klaipeda towards this may be proved by the fact that Klaipeda won the title of the Lithuanian Capital of Culture in 2017.

Despite the different origins of the initiative, both cities provided clarification of the Programme inclusion in their long-term strategies. We argue, therefore, that close cohesion between the *ECoC* programme and the *sustainability approaches* would occur if any of the latter were strategically planned. A deeper analysis of the respective documents, however, revealed somewhat weak integration of sustainability and its marketing approaches into the Programmes (see Table 3).

The results of the analysis that are presented in the 3rd table enable us to affirm that the attitude of the candidate cities towards marketing differs markedly. Even though both cities have planned various means of marketing reflecting all seven groups, the analysis of the marketing spectrum revealed that Klaipeda has described the more detailed and more accurate marketing strategy. These findings raise the question: *what affected the different choice of the two cities?* The explanation could be that Klaipeda, as the third city in Lithuania, undoubtedly needs to search for an exceptional competitive advantage; nonetheless, the influence of the ruling party's ideology could be felt

as well (due to the long-term political governance of the liberal party, citizens are treated or even valued as consumers).

Comparative analysis revealed most inscriptions to be similar (e.g., *bilingual websites, virtual platforms, computer games, outdoor stands, logos on transport vehicles, etc.*). Both cities, however, offered some different marketing means (e.g., Kaunas: *marketing via sport, flying balloons, a hedonometer for evaluation, and word of mouth*; Klaipeda: *exposition of national costumes, post cards, post stamps, cultural passport, SMS, and meeting points*). It becomes obvious while analysing the respective proposals that Klaipeda's marketing strategy includes more traditional means than Kaunas, which mostly opted for digital capabilities, thus fulfilling the requirements of the Guide (European Capitals of Culture, 2014).

The huge variety in terms of marketing means would be highly beneficial for *sustainability marketing*, if only such requirements were included in the *Programme Guide* or sustainability as an aim were seriously considered in the cities' strategies. The results of the content analysis enable us to state that neither one nor the other exist *de jure*. Moreover, in terms of the previously discussed context, we see that none of the applicants even attempted to change the perception (i.e. *brand*) of the city as with Liverpool (Boland, 2010) and/or to market the city as Lithuania's centre of culture, which could increase the country's international competitiveness.

The content analysis revealed the emphasis to be on *People* (i.e. the *social* aspect) in both applications. This category covers around 600 words (e.g. society, community, citizens, residents, youth, etc.). Conversely, there is close to zero mention of *Planet* (i.e. the environmental or ecological aspect) and the category of *sustainability*. The scale (see Fig. 3) reveals that division among the categories looks very similar in both applications, with the greatest focus on *People*. Despite several questions dedicated to *sustainability* (Application template questions No. 5, 7, 17, 20 and 47) the category of *sustainability* is reflected

Table 3: Comparison of Kaunas and Klaipeda bid details (own elaboration)

Category	Kaunas	Klaipeda
Marketing		
Promotion and Marketing budget	6 m Eur (20% of total budget)	4 m Eur (12.5% of total budget)
Marketing means	All groups ⁴ (22 positions)	All groups (30 positions)
"Marketing" term used	36	19
Sustainability		
"Sustainability" term used	8	5
"Ecology" term used	3	7

⁴ Printed materials and broadcasting; new technologies and new media; trade; special events; other initiatives revealed by M. Lamza–Maronić, et al. (2011)

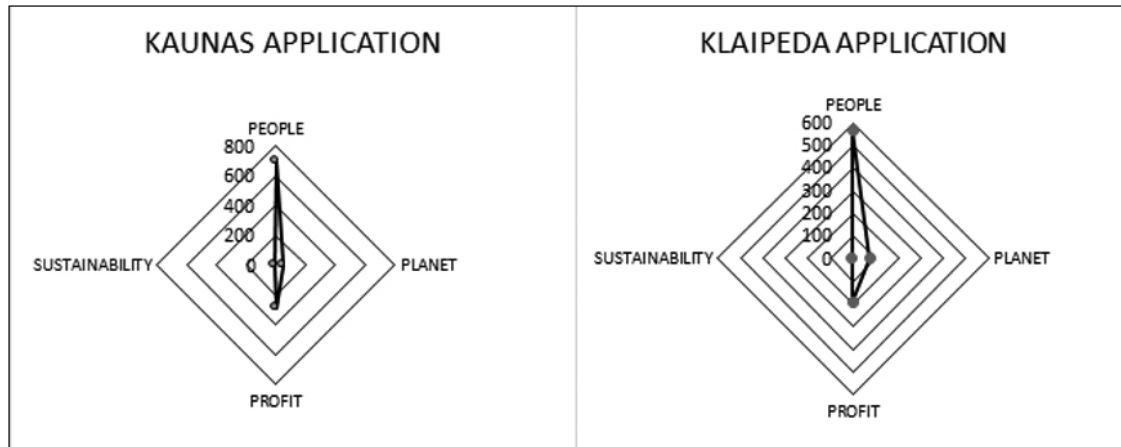


Figure 3: Sustainability dimensions in Kaunas' and Klaipeda's applications for the title of ECoC (own elaboration)

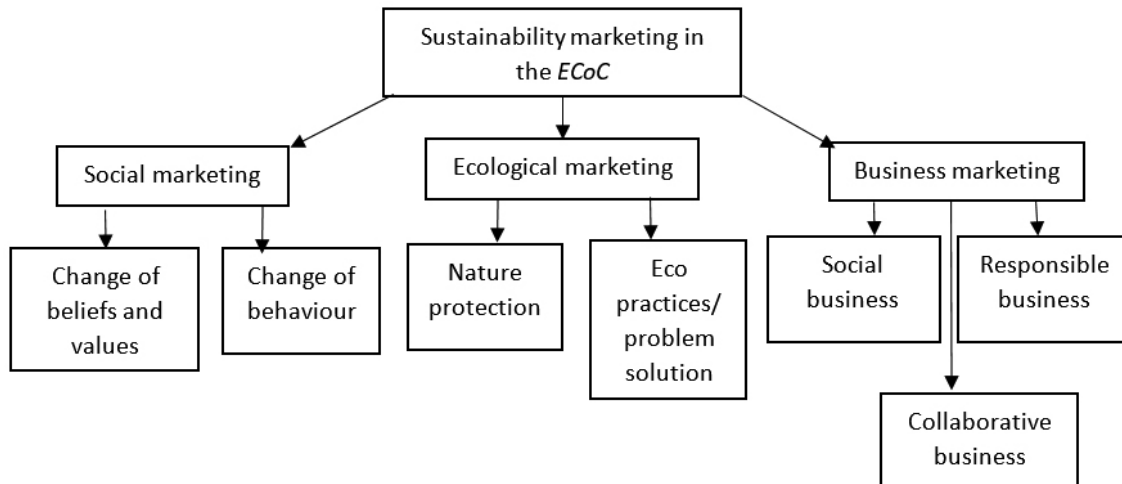


Figure 4. Model of sustainability marketing (own elaboration)

very poorly. The same is true of *Planet*.

Agreeing with the definition of *sustainability marketing* and following the recommendations of the DEX methodology (as proposed by Bohanec, 2015) we developed a primary hierarchical model of sustainable marketing that could serve as a helpful tool for decision-makers while choosing the winner of the *ECoC* title (see Fig. 4).

Sustainability marketing is a core attribute in the model and represents the main output. The lowest or basic attributes represent inputs of the actions, while the intermediate attributes (the aggregated ones) represent intermediate results. In reality, the model could be further developed involving different decision-makers or their groups that have different and sometimes even conflicting goals (see, e.g., Bohanec, 2015).

Furthermore, the model has been tested by evaluating the marketing sections of the analysed applications. The

results of the evaluation (calculated using the DEXi software programme) are presented in Table 4.

According to the results of the evaluation, it is evident that the marketing section of the Kaunas application refers slightly more to sustainability than the corresponding section of the Klaipeda application. Despite the better position of social marketing, the other two equally important parts of the marketing section (i.e. environmental marketing and business marketing) are equally poorly expressed in the applications.

The results of the overall research, therefore, lead to the conclusion that sustainability marketing is misused in both applications.

Table 4: Sustainability marketing aspects in Kaunas' and Klaipeda's applications (marketing sections) (own elaboration)

Klaipeda	Option	Kaunas
LOW	SUSTAINABILITY MARKETING	MEDIUM
Low	Social Marketing	Medium
low	Believes and values	medium
low	Behaviour	medium
Low	Environmental Marketing	Low
low	Nature protection	low
low	Eco practices	low
Medium	Business Marketing	Medium
low	Social business	low
low	Responsible business	low
high	Collaborative business	high

7 Discussion

Despite the fact that authors assign different models of relations between culture and sustainability, it has already been proven that culture plays a very important role and might be helpful in terms of sustainable development. The analysis of the *ECOC* regulations and reports revealed the Programme to still be quite weak in the integration of sustainability aspects overall.

According to Soini and Dessein (2016, p.1): “*it is important and necessary to explicitly integrate culture in sustainability discourse, as achieving sustainability goals essentially depends on human accounts, actions, and behaviour which are, in turn, culturally embedded*”. We argue, therefore, that the *ECOC* Programme should be shifted from Mode 1 *Culture in Sustainability* to Mode 3 *Culture as Sustainability* (as presented in Fig. 1). The decisions and actions of the responsible authorities are of great importance to such a change.

We thus emphasise the necessity of reviewing the aims and objectives of the *ECOC*'s documents while integrating more linkage to the overall sustainable development. Admitting the power of marketing, the *ECOC* should clearly interrelate *culture* and *sustainability*, providing a coherent marketing strategy (*sustainability marketing*) grounded on sustainable thinking. The employment of experts and appropriate decision-making support systems in sustainable development would lead to the achievement of this goal; while the inclusion of joint culture – *sustainability marketing* means as the assessment criteria for the determination of the winners of the *ECOC* title could be worth discussing further.

8 Conclusions

It has already been proven that sustainability as a common global idea should be integrated in both individual and societal beliefs, values and behaviours. Culture, being perceived as a set of shared beliefs, values and expected behaviours, could then become a key element in empowering people with the new understanding of the common world and its problems, or with the impetus to focus on sustainability in other words.

The proper integration of cultural policy into the overall development of the social system may impact and change cultural values and beliefs, shifting them towards sustainability and sustainable behaviour. The ideal result of this shift would shape or reshape the meaning of the natural environment, considering it a constituent of culture, and would lead to completely new policies accommodating sustainability principles as well. This shift could also raise new modes of self-governance or even meta-governance.

Political decisions and actions are mostly important for sustainability and sustainable development. Regional and local strategies should include policies which involve and engage citizens into collective or individual sustainable actions and lead to sustainable behaviour or even transformation into a sustainable society living within sustainable self-governance.

Improving sustainability in the appropriate territory is possible while serving as the European Capital of Culture. The *ECOC* Programme may play an important role while shifting to the new mode of development. The marketing of the Programme is described as a comprehensive action.

Marketing should be oriented to the entire community, its social goals and the protection of the environment, and should both include all sustainability aspects and be promoted by using various means of marketing.

Sustainability marketing is therefore of great impor-

tance from both the initiating and implementing sides of the Programme. Sustainable marketing, not just sustainability alone, should be considered as prerequisites for the selection criteria while competing for the ECoC title and the future *ex-post* evaluation of the impact and effects of the ECoC. Decision-making support systems might help both politicians and experts improve the ECoC programme's impact on the transformation to sustainability.

Literature

Aubert, A., Marton, G., & Raffay, Z. (2015). Impacts of the European capital of culture title of Pécs on the city's tourism. *Geographica Timisiensis*, 24(1), 31-42.

Bell, S. & Morse, S. (2003). *Measuring Sustainability: Learning by Doing*. Earthscan Publications Ltd.

Belz, F.M. & Karstens, B. (2005). Strategic and Instrumental Sustainability Marketing in the Western European Food Processing Industry: Conceptual Framework and Hypothesis. *Proceedings of the Corporate Responsibility Research Conference*, Euromed Management School Marseille France, 4. Available from http://www.crrconference.org/Previous_conferences/downloads/belz.pdf

Bohanec, M. (2015). *DEXi: Program for Multi – Attribute Decision Making*. User's Manual. Versio 5.00. Institut "Jožef Stefan", Ljubljana, Slovenia. Available from <http://kt.ijs.si/MarkoBohanec/pub/DEXiManual500.pdf>

Boland, P. (2010). 'Capital of Culture – you must be having a laugh!' Challenging the official rhetoric of Liverpool as the 2008 European cultural capital. *Social & Cultural Geography*, 11(7), 627-645, <http://dx.doi.org/10.1080/14649365.2010.508562>

Chiu, C.Y., Gelfand, M. J., Yamagishi, T., Shteynberg, G. & Wan, C. (2010). Intersubjective Culture: The Role of Intersubjective Perceptions in Cross-Cultural Research. *Perspectives on Psychological Science*, 5(4), 482-493, <https://doi.org/10.1177/1745691610375562>

Commission staff working document. (2012). *European Capitals of Culture post 2019 Accompanying the Document Proposal for a Decision of the European Parliament and of the Council establishing a Union action for the European Capitals of Culture for the years 2020 to 2033*. Brussels, 20.7.2012 SWD 226 final. Available from: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012SC0226&from=EN>

Dessein, J., Soini, K., Fairclough, G. & Horlings, L. (eds) (2015). *Culture in, for and as Sustainable Development. Conclusions from the COST Action IS1007 Investigating Cultural Sustainability*. University of Jyväskylä, Finland.

Draghici, C. et al. (2015). The Role of European Capital of Culture Status in Structuring Economic Profile of Sibiu, Romania. *Procedia Economics and Finance*, 26, 785-791, [http://dx.doi.org/10.1016/S2212-5671\(15\)00870-9](http://dx.doi.org/10.1016/S2212-5671(15)00870-9)

Edwards, M.G. (2009). An integrative metatheory

for organizational learning and sustainability in turbulent times. *The learning organization*, 16(3), 189-207, <https://doi.org/10.1108/09696470910949926>

Epstein, M.J. (2008). *Making sustainability work: best practices in managing and measuring corporate social, environmental and economic impacts*. Greenleaf Publishing.

Eroğlu, O. & Piçak, M. (2011). Entrepreneurship, National Culture and Turkey. *International Journal of Business and Social Science*, 2(16), 146-15.

European Commission. (2014). *European Capitals of Culture 2020-2033*. Guide for cities preparing to bid.

Fithian, C. & Powell, A. (2009). Cultural Aspects of Sustainable Development. Available from: <http://webmail.seedengr.com/Cultural%20Aspects%20of%20Sustainable%20Development.pdf>

Garcia, B. & Cox, T. (2013). *European capitals of culture: success strategies and long-term effects study*. EU Directorate general for internal policies policy department b: structural and cohesion policies culture and education.

Giltrow, M. (2015). Investigating the Relationship of Wellbeing with Sustainable Values, Attitudes and Behaviour. In W.L. Filho (ed.), *Transformative Approaches to Sustainable Development at Universities*. Springer International Publishing.

Glaeser, E. L., Kolko, J., & Saiz, A. (2001). Consumer city. *Journal of Economic Geography*, 1(1), 27-50, <https://doi.org/10.1093/jeg/1.1.27>

Golob, A., Lesjak, M., Fabjan, D., Jakulin, T. J. & Stamenković, I. (2015). Assessment of Sustainability of Sports Events (Slovenia). *Turizam*, 19(2), 71-83, <http://dx.doi.org/10.5937/Turizam1502071G>

Greblikaite, J., Sroka, W., Daugėlienė, R., & Kurowska-Pysz, J. (2016). Cultural Integration and Cross-cultural Management Challenges in the Central European Countries: Lithuania and Poland. *European Integration Studies*, 10(1), 29-43, <http://dx.doi.org/10.5755/j01.eis.0.10.16281>

Griffiths, R. (2006). City/culture discourses: Evidence from the competition to select the European Capital of Culture 2008. *European Planning Studies*, 14(4), 415-430, <https://doi.org/10.1080/09654310500421048>

Hawkes, J. (2001). *The Fourth Pillar of Sustainability: Culture's essential role in public planning*. Common Ground Publishing & Cultural Development Network (Vic), Melbourne.

Herrero, L. C., Sanz, J. Á., Devesa, M., Bedate, A., & Del Barrio, M. J. (2006). The economic impact of cultural events: a case-study of Salamanca 2002, European Capital of Culture. *European urban and regional studies*, 13(1), 41-57, <https://doi.org/10.1177/0969776406058946>

Hudec, O., & Džupka, P. (2016). Culture-led regeneration through the young generation: Košice as the European Capital of Culture. *European Urban and Regional Studies*, 23(3), 531-538, <https://doi.org/10.1177/0969776414528724>

- Immler, N.L. & Sakkers, H. (2014). (Re)Programming Europe: European Capitals of Culture: rethinking the role of culture. *Journal of European Studies*, 44(1), 3– 29, <https://doi.org/10.1177/0047244113515567>
- Kaunas city municipality (2016). *Kaunas European Capital of Culture (pre – final bid)*. Available from: http://kaunas2022.eu/wp-content/uploads/2017/03/Kaunas_2022_ECoC_final_bid_EN.pdf
- Klaipėda city municipality (2016). *Klaipėda European Capital of Culture 2020 (pre – final bid)*. Available from: [https://lrkm.lrv.lt/uploads/lrkm/documents/files/Klaip%C4%97da_2022_ECoC-pre-selection_bid\(1\).pdf](https://lrkm.lrv.lt/uploads/lrkm/documents/files/Klaip%C4%97da_2022_ECoC-pre-selection_bid(1).pdf)
- Lamza–Maronić, M., Glavaš, J. & Mavrin, I. (2011). Marketing Aspects of the European Capital of Culture Programme. *Interdisciplinary Management Research*, 7, 130-140.
- Lim, W. M. (2016). Lim, W. M. (2016). A blueprint for sustainability marketing. *Marketing theory*, 16(2), 232-249, <https://doi.org/10.1177/1470593115609796>
- Maraña, M. (2010). *Culture and Development. Evolution and Prospects*. Bilbao, Spain, UNESCO Etxea (UNESCO Etxea Working Papers, No. 1).
- Milton Keynes Council (2015). *Bidding for Cultural Status*. Feasibility Study. Available from: <https://www.milton-keynes.gov.uk/assets/attach/28775/MK%20Capital%20of%20Culture%20Report.pdf>
- Nechita, F. (2015). Bidding for the European Capital of Culture: Common Strengths and Weaknesses at the Pre-selection Stage. *Bulletin of the Transilvania University of Brasov. Series VII: Social Sciences, Law*, 8(1).
- Nemeth, A. (2010). Mega-events, their sustainability and potential impact on spatial development: the European Capital of Culture. *The International Journal of Interdisciplinary Social Sciences*, 5, 265-278.
- Nkamnebe, A. D. (2011). Sustainability marketing in the emerging markets: imperatives, challenges, and agenda setting. *International Journal of Emerging Markets*, 6(3), 217 – 232, <https://doi.org/10.1108/17468801111144058>
- Nurse, K. (2006). Culture as the Fourth Pillar of Sustainable Development. *Small States: economic review and basic statistics*, 1, 28-40.
- O’Callaghan, C. (2012). Urban anxieties and creative tensions in the European Capital of Culture 2005: ‘It couldn’t just be about Cork, like’. *International journal of cultural policy*, 18 (2), 185-204, <https://doi.org/10.1080/10286632.2011.567331>
- Opuku, A. (2015). The Role of Culture in a Sustainable Built Environment. In A. Chiarini (Ed.), *Sustainable Operations Management*. Springer International Publishing, 37-52.
- Palmer/Rae Associates (2004). *European Cities and Capitals of Culture*. Brussels: Palmer/Rae.
- Peattie, K. & Belz, FM. (2010). Sustainability marketing – An innovative conception of marketing. *Marketing Review St.Gallen*, 27(5), 8–15, <https://doi.org/10.1007/s11621-010-0085-7>
- Peter, C. & Swilling, M. (2014). **Linking Complexity and Sustainability Theories: Implications for Modeling Sustainability Transitions**. *Sustainability*, 6(3), 1594-1622, <http://dx.doi.org/10.3390/su6031594>
- Pykett, J., Jones, R., Welsh, M. & Whitehead, M. (2014). The art of choosing and the politics of social marketing. *Policy Studies*, 35(2), 97–114, <https://doi.org/10.1080/01442872.2013.875141>
- Rakic, B. & Rakic, M. (2015). Holistic management of marketing sustainability in the process of sustainable development. *Environmental Engineering and Management Journal*, 14(4), 887-900. Available from: <http://omicon.ch.tuiasi.ro/EEMJ/>
- Richards, G. (2000). The European Cultural Capital Event: Strategic Weapon in the Cultural Arms Race? *Journal of Cultural Policy*, 6(2), 159-181, <https://doi.org/10.1080/10286630009358119>
- Rindzevičiūtė, E., Svensson, J. & Tomson, K. (2016). The international transfer of creative industries as a policy idea. *International Journal of Cultural Policy*, 22(4), 594-610, <https://doi.org/10.1080/10286632.2015.1025067>
- Sazonova, L. (2014). *Cultural Aspects of Sustainable Development: Glimpses of the Ladies’ Market*. Friedrich-Ebert-Stiftung, Office Bulgaria.
- Scammon, D. (2012). *Sustainability and culture: how do they work together?* LCC 480 senior seminars, 30 April 2012. Available from: http://www.academia.edu/1817961/Sustainability_and_Culture_How_do_they_work_together [cited from A. Chiarini (ed.), *Sustainable Operations Management*. Springer International Publishing]
- Selection of the European Capital of Culture for the year 2022 in Lithuania. (2016). The Selection Panel’s report. Pre-Selection Stage. Vilnius. Available from: <https://ec.europa.eu/programmes/creative-europe/sites/creative-europe/files/files/ecoc-2022-lithuania-preselection.pdf>
- Senge, P. & Smith, B. (2008). *The necessary revolution: how individuals and organizations are working together to create a sustainable world*. USA.
- Senkus, P. (2013). Marketing 3.0: The Challenge for Private, Public and Non-profit Sectors, Theoretical Approach. *Rural Development*. The sixth International Scientific Conference, Proceedings, 6, 328-335.
- Slaper, T. F. & Hall, T. J. (2011). *The Triple Bottom Line: What Is It and How Does It Work?* Available from: <http://www.ibrc.indiana.edu/ibr/2011/spring/article2.html>
- Soini, K. & Dessein, J. (2016). Culture-Sustainability Relation: Towards a Conceptual Framework. *Sustainability*, 8(2), 167, <http://dx.doi.org/10.3390/su8020167>
- Sridhar, K. & Jones, G. (2013). The three fundamental criticisms of the Triple Bottom Line approach: An empirical study to link sustainability reports in companies based in the Asia-Pacific region and TBL shortcomings. *Asian Journal of Business Ethics*, 2(1), 91–111.

Steiner, L., Frey, B., & Hotz, S. (2015). European capitals of culture and life satisfaction. *Urban studies*, 52(2), 374-394, <http://dx.doi.org/10.1177/0042098014524609>

Thaler J. & Helmig B. (2013). Theoretical Framework of Social Marketing Effectiveness: Drawing the Big Picture on its Functioning. *Journal of Nonprofit & Public-Sector Marketing*, 25, 211-236, <https://doi.org/10.1080/10495142.2013.819708>

Turşie, C. (2015). Re-Inventing the Centre-periphery Relation by the European Capitals of Culture. Case-studies: Marseille-Provence 2013 and Pecs 2010. *Eurolimes*, 19.

Wróblewski, Ł. (2016). Creating an Image of a Region—Euroregion Beskydy and Euroregion Cieszyn Silesia examples. *Ekonomia i Zarządzanie*, 8(1), 91-100, <https://doi.org/10.1515/emj-2016-0010>

Van Aalst, I. & van Melik, R. (2012). City festivals and urban development: does place matter? *European Urban and Regional Studies*, 19(2), 195-206, <https://doi.org/10.1177/0969776411428746>

Valentina Burksiene received her Master's degree in Management of Recreation and Tourism from Klaipeda University, Klaipeda, Lithuania in 2006. She received her PhD in Management and Administration (Social Sciences) from Kaunas University of Technology in 2012. Since 2016, she has been an Associate Professor at the Department of Public Administration and Social Geography of Social Science Faculty, Klaipeda University. Her areas of research include sustainable development, strategic planning, organizational learning, public administration and tourism management.

Jaroslav Dvorak is associate professor and head of the Department of Public Administration and Social Geography at Klaipeda University in Lithuania. He was visiting researcher at Uppsala University in Sweden, Institute of Russian and Eurasian studies. His work focuses on evaluation capacity building in public administration, public service delivery models and alternatives, prevention of frauds in local governments, administration of industrial relations.

Gabriele Burbulyte-Tsiskarishvili received MA in Public Administration at Klaipeda University (Klaipeda, Lithuania) in 2002. She works as lecturer at the Department of Public Administration and Social Geography at Klaipeda University since 2002. Areas of research include regional policy, local governance, and management of organizations.

Trajnost in trženje trajnosti v tekmovanju za naziv Evropske prestolnice kulture

Ozadje in namen: V članku je predstavljena analiza razsežnosti trajnosti v kontekstu konkuriranja za naslov Evropske prestolnice kulture (EPK). Avtorji raziskave se strinjajo, da ustrezno vključevanje kulturne politike v družbeni sistem vpliva na in spreminja kulturne vrednote in prepričanja v smeri trajnostnega vedenja in trajnosti. Mnogi avtorji analizirajo medsebojno povezanost med kulturo in trajnostjo, s čimer opredeljujejo vlogo kulture za trajnost. Vendar le redki razpravljajo o možnih pristopih ali orodjih, ki lahko nudijo pomoč pri tem, kako doseči trajnost v kontekstu kulture.

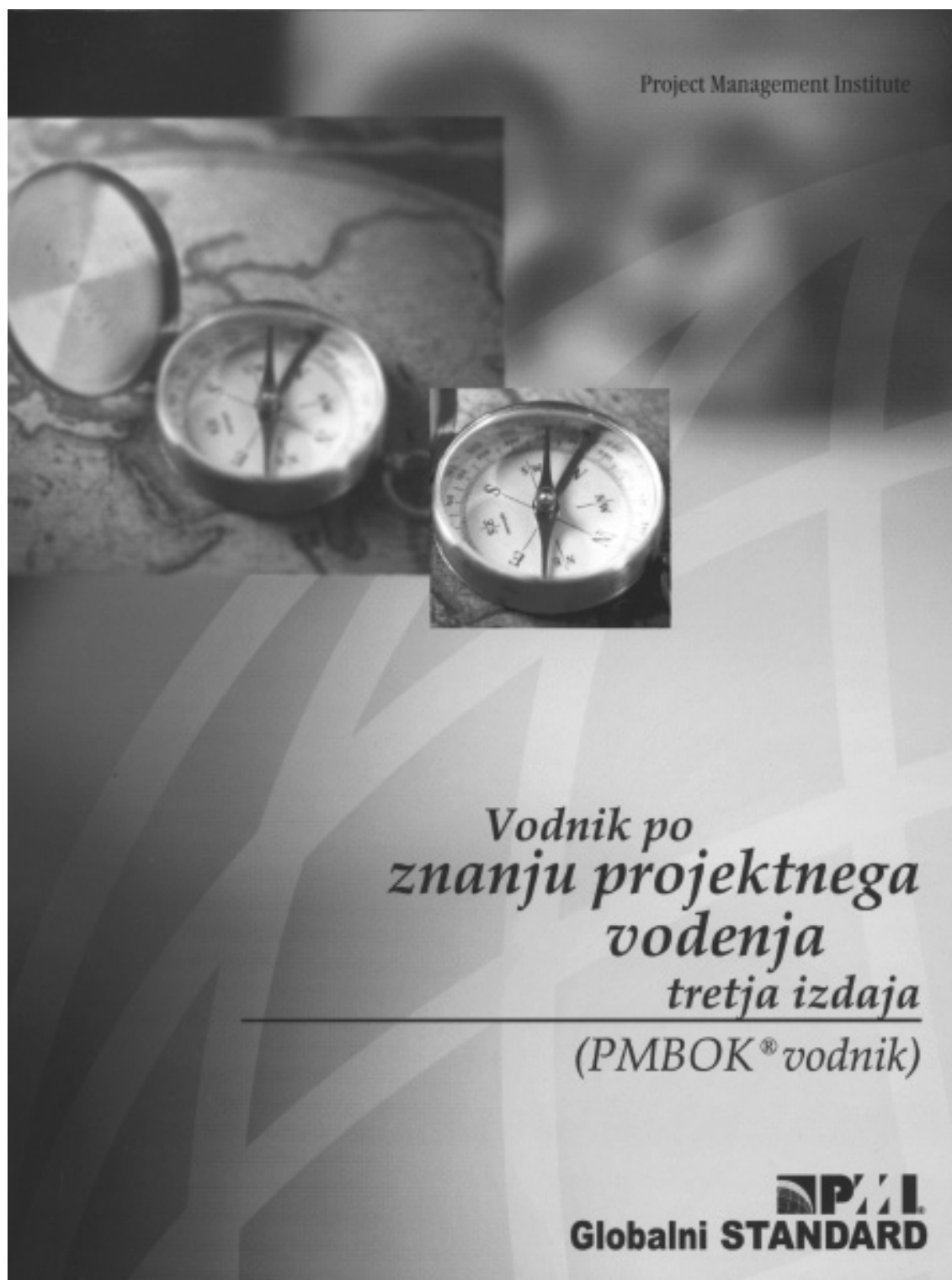
Zasnova / metodologija / pristop: Raziskava temelji na primerjalni analizi vlog posameznih mest. Metodologija TBL se izvaja z uporabo metode analize vsebine kot orodja. Rezultate analize vsebine nato uporabimo za izdelavo kvalitativnega multi-atributnega modela z metodo DEX.

Rezultati: Pri analizi dokumentacije za zbiranje ponudb za EPK smo: a) opredelili pomen trženjskega načrta (opisanega kot celovit ukrep) in b) ugotovili, da je treba trženje ECoC obrniti na „trženje trajnosti“, kot to opisujejo in opredeljujejo v mnogi avtorji.

Zaključki: Komisija za izbor EPK bi morala upoštevati pomen kulture za trajnostni razvoj in bi morala oceniti tržni načrt prosilcev v okviru trajnostnega okvira.

Ključne besede: kultura; Evropska prestolnica kulture (EPK); trženje; trajnost; trženje trajnosti





AUTHOR GUIDELINES / NAVODILA AVTORJEM

Manuscripts considered for publication in Organizacija (organizacija@fov.uni-mb.si) are those which:

- *Contain original work* – which is not published elsewhere in any medium by the authors or anyone else and is not under consideration for publication in any other medium. The author(s) is/are also responsible for any violations of the copyright regulations.
- *Are focused on the core aims and scope of the journal*: Organizacija is an interdisciplinary peer reviewed journal that seeks both theoretically and practically oriented research papers from the area of organizational science, business information systems and human resources management.
- *Are clearly and correctly written* – should contain all essential features of a complete scientific paper, should be written in a clear, easy to understand manner and be readable for a wide audience.
- *Are written in English* – should be clearly and grammatically written, in an easily readable style. Attention to detail of the language will avoid severe misunderstandings which might lead to rejection of the paper. Correct language is the responsibility of the authors. Unless the author is an English native speaker, the paper must be proofread by a language editor, English native speaker

All parts of the manuscript should be type-written (font size 12), with margins of 2.5 cm. Pages should be numbered consecutively throughout the manuscript. The text should be subdivided into numbered chapters. Figures and tables, consecutively numbered (Figure 1, Figure 2, ..., Table 1, Table 2, ...) can be included in electronic form in the text. All lettering and figure elements must be large enough to be readable when figure or table has been reduced to fit journal page or column. All figures and tables must be specifically referred in the text. Colour pictures cannot be published in the printed version of the journal; colours appear only in the internet version. The paper should start with a cover page with names and mailing and electronic addresses of the authors. To assure the anonymity of the refereeing procedure the names of the authors should not appear in the text.

When referring to the literature use the APA style (<http://www.apastyle.org/>). A short description of

the APA style is included in the Guidelines for Authors (see <http://www.degruyter.com/view/j/orga>).

All the papers will be reviewed by at least two referees. Based on the opinions and suggestions of the reviewers, the editors accept the paper, demand minor or major enhancements, or reject the paper. If major enhancements are required the upgraded paper is reviewed again.

Manuscripts can be submitted via journal web site (<http://organizacija.fov.uni-mb.si>). For further information and clarifications contact Organizacija's editorial office (organizacija@fov.uni-mb.si or joze.zupancic@fov.uni-mb.si).

Address of the Editorial office:
University of Maribor,
Faculty of Organizational Science
Kidričeva cesta 55a
4000 Kranj, Slovenia
Fax: +386-4-2374-299
Phone: +386-4-2374-226

V reviji Organizacija objavljamo znanstvene članke, rezultate raziskovalnega dela avtorjev. Predloženi prispevki naj bodo napisani v angleškem jeziku. Imeti morajo strukturo IMRAD, ki je običajna za znanstvena in strokovna besedila (informacija n.pr. na <http://www.uta.fi/FAST/FIN/RESEARCH/imrad.html>). Objavljamo dela s predmetnega področja revije, ki še niso bila objavljena in niso bila poslana v objavo v kakšni drugi reviji ali zborniku. Avtorji so odgovorni za vse morebitne kršitve avtorskih pravic.

Besedilo naj bo oblikovano za tiskanje na papirju in levo poravnano. Na začetku prispevka, takoj za naslovom, naj bo povzetek (izvleček) dolžine največ 250 besed, ključne besede, v končni – sprejeti verziji članka pa na koncu prispevka tudi kratek strokovni življenjepis vsakega od avtorjev (do 10 vrstic) in letnica rojstva (zaradi vnosa podatkov v knjižnični informacijski sistem COBISS, v reviji letnica ne bo objavljena). Na prvi strani besedila naj bodo napisani le naslov prispevka, imena in (poštni in elektronski) naslovi avtorjev članka, po možnosti tudi telefonska številka enega od avtorjev. Da bi zagotovili anonimnost recenziranja, naj se imena avtorjev ne pojavljajo v besedilu prispevka. Na koncu članka, za življenjepisi, naj bo slovenski prevod naslova, povzetka in ključnih besed.

Članek naj bo razčlenjen v oštevilčena poglavja. Naslovi članka, poglavij in podpoglavij naj bodo napisani z malimi črkami, da so razvidne kratice. Slike in tabele v elektronski obliki vključite kar v besedilo. Besedilo so lahko priložene slike in/ali tabele na papirju v obliki pripravljeni za preslikavo. V tem primeru naj bo vsaka slika na posebnem listu, oštevilčene naj bodo z arabskimi številkami, v besedilu naj bo označeno, kam približno je treba vvrstiti sliko: na tem mestu naj bo številka slike/tabele in njen podnapis. Slike bomo praviloma pomanjšali in jih vstavili v članek. Upoštevajte, da morajo biti oznake in besedila na vseh slikah dovolj velika, da bodo čitljiva tudi pri velikosti slike, kot bo objavljena v reviji. Vse slike naj bodo črno-bele z belim ozadjem; barvnih slik v tiskani verziji revije ne moremo objaviti, barve so vidne le v spletni verziji.

Članki morajo biti pred objavo v Organizaciji lektorirani. Končno verzijo mora lektorirati naravni govorec oz. lektor s primerljivim znanjem angleščine.

Seznam citirane literature oblikujte v APA stilu; podroben opis le-tega je na <http://www.apastyle.org/>, povzetek pa je tudi v podrobnem navodilu avtorjem na www.versita.com/o/authors. Ne uporabljajte opomb za citiranje; eventualne opombe, ki naj bodo kratke, navedite na dnu strani. Označite jih z arabskimi številkami.

Predložene prispevke pregledata in ocenita najmanj dva recenzenta. Na osnovi mnenj in predlogov recenzentov uredniški odbor ali urednik sprejmejo prispevek, zahtevajo manjše ali večje popravke in dopolnitve ali ga zavrnejo. Če urednik oziroma recenzenti predlagajo večje popravke, se dopolnjeni prispevek praviloma pošlje v ponovno recenzijo.

Članke za objavo lahko predložite preko spletnega mesta <http://organizacija.fov.uni-mb.si>. Za nadaljnje informacije in pojasnila se lahko obrnete na uredništvo Organizacije (organizacija@fov.uni-mb.si ali joze.zupancic@fov.uni-mb.si).

Naslov uredništva:

Univerza v Mariboru,
Fakulteta za organizacijske vede
Kidričeva cesta 55a
4000 Kranj
Faks: 04-2374-299
Tel.: 04-2374-226

Prva slovenska revija za organizacijska in kadrovska raziskovanja in prakso. Revijo sofinancira Javna agencija za raziskovalno dejavnost Republike Slovenije. Ponatis in razmnoževanje deloma ali v celoti brez pisnega dovoljenja nista dovoljena. Izdajatelj: Univerza v Mariboru, Fakulteta za organizacijske vede Kranj, Založba MODERNA ORGANIZACIJA, Kidričeva cesta 55a, KRANJ, telefon: 04 23 74 200, telefax: 04 23 74 299, E-pošta: organizacija@fov.uni-mb.si. Uredništvo revije: Kidričeva cesta 55a, 4000 Kranj, naročniški oddelek: 04 23 74 295. Letna naročnina: za pravne osebe za prvi naročeni izvod 51,47 EUR, drugi naročeni izvod 41,38 EUR, vsak nadaljnji 36,33 EUR, za posameznike 25,23 EUR. Cena posamezne številke je 9,08 EUR. Na leto izidejo 4 številke. Tisk: ROLGRAF d.o.o. Naklada 200 izvodov.

Organizacija is covered by the following services: Cabell's Directory, CEJSH (The Central European Journal of Social Sciences and Humanities), Celdes, CNPIEC, Die Elektronische Zeitschriftenbibliothek, DOAJ, EBSCO - TOC Premier, EBSCO Discovery Service, ECONIS, Ergonomics Abstracts, ERIH PLUS, Google Scholar, Inspec, International Abstracts in Operations Research, J-Gate, Microsoft Academic Search, Naviga (Softweco), Primo Central (ExLibris), ProQuest - Advanced Polymers Abstracts, ProQuest - Aluminium Industry Abstracts, ProQuest - Ceramic Abstracts/World Ceramics Abstracts, ProQuest - Composites Industry Abstracts, ProQuest - Computer and Information Systems Abstracts, ProQuest - Corrosion Abstracts, ProQuest - Electronics and Communications Abstracts, ProQuest - Engineered Materials Abstracts, ProQuest - Mechanical & Transportation Engineering Abstracts, ProQuest - METADEX (Metals Abstracts), ProQuest - Sociological Abstracts, ProQuest - Solid State and Superconductivity Abstracts, Research Papers in Economics (RePEc), SCOPUS, Summon (Serials Solutions/ProQuest), TDone (TDNet), TEMA Technik und Management, WorldCat (OCLC)

CONTENTS - 1/2018

Włodzimierz SROKA, Joanna KUROWSKA-PYSZ, Štefan HITTMÁR Editorial	3
Jarmila ZIMMERMANNNOVÁ, Adam PAWLICZEK, Petr ČERMÁK Public Support of Solar Electricity and its Impact on Households - Prosumers	4
Brigita GAJŠEK, Jure KOVAČ, Benjamin T. HAZEN An Organizational Framework for Logistic Platform and its Subtypes in a Search for More Logistically Attractive Regions	20
Liliya SATALKINA, Nestor SHPAK Evaluation of the Influence of the Macro-environment on the Social Innovation Activity of Enterprises	36
Maja DIMIĆ, Lidija BARJAKTAROVIĆ, Olja ARSENIJEVIĆ, Polona ŠPRAJC, Janez ŽIROVNIK Measuring the Concentration of Insurance sector – the Case of Southeastern European Countries	50
Valentina BURKSIENE, Jaroslav DVORAK, Gabriele BURBULYTE-TSISKARISHVILI Sustainability and Sustainability Marketing in Competing for the Title of European Capital of Culture	66