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SELECTED PROBLEMS
OF DYNAMICALLY
DEVELOPING AREAS
OF THE ECONOMY

productivity

completion time

planning

deadlines

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scope

projects

activities

prioritization

effectiveness

productivity

Edited by
Renata Seweryn, Tomasz Rojek

KNOWLEDGE – ECONOMY – SOCIETY

SELECTED PROBLEMS OF DYNAMICALLY DEVELOPING AREAS OF ECONOMY

CRACOW UNIVERSITY OF ECONOMICS
Faculty of Management
FOUNDATION OF THE CRACOW UNIVERSITY OF ECONOMICS

KNOWLEDGE – ECONOMY – SOCIETY

SELECTED PROBLEMS OF DYNAMICALLY DEVELOPING AREAS OF ECONOMY

Edited by
Renata Seweryn, Tomasz Rojek

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Introduction

The contemporary economy is an economy of constant changes undergoing both on the market as the natural environment of the functioning of entities of the real and regulatory sphere, as well as internal changes referring to the resources used and the scope and structure of contemporary entities. Instability and accompanying unpredictability of the conditions of this environment are the reasons for which the aforementioned changes in economy are manifested, among others, in the changing needs of the market, socio-cultural conditionings, or transformations with regard to the resources used, namely technology, technique, capital, law and knowledge as the driving forces of economy. The factors have a direct impact on operations, or more broadly, transformations made in various spheres of an enterprise. The ability to act rationally, adapt to new internal and external circumstances, flexible and appropriate reacting to undergoing changes are only some of the attributes of the management process responsible for the effective adaptation to changes. The conditionings mentioned here imply the needs to adopt the management concepts, methods and tools to the aforementioned changes to be able, owing to the proper choice of economic resources, their proper linking to each other, as well as thanks to the use of proper methods of conducting activity, to efficiently and effectively achieve the goals set. Such understanding of management, as a process of formulating the objectives of organisations and showing the ways of achieving them, has a highly universal character because it refers to all types of organisations which, irrespective of various motives of their activities, are purposeful and characterised by the permanent strive for the goals set.

Therefore, enterprises functioning in the economy defined in this way undergo constant evolution, adopting objectives, functions and tasks, as well as the methods of the organisation of labour and management to the changing conditions of conducting business activity. The sources of the evolution and a change in their behaviours should be searched for in already presented contemporary market conditions which on the one hand create new opportunities for the functioning and development of enterprises, and on the other hand pose new requirements and challenges to them. Thus, the effects and future developmental opportunities of business entities and institutions are determined by the speed and rightness of the identification of changes taking place in the environment, proper analysis and assessment, as well as the flexibility and readiness to reorient the activity of enterprises towards the appropriate organisation of the existing and new structures in relation to the market and crisis situations, the perception of customers and competitors, as inseparable elements of their activity, the creation of the ability to overcome the resistance of the environment and the creation of own strategic potential.

Therefore, the basis of the contemporary management is understanding by managers of the fact that only those organisations will survive which will be able to develop, which will know the needs of the market, be able to adopt their resources to them, and be able to defeat their competitors

at the same time. However, it should be observed that competition and the market globalisation have changed not only the principles of the functioning of the market, but also require adequate changes in the behaviour of organisations on the market. The changes require greater consideration in managing organisations of the focus on the innovativeness of organisations, which should be the main creative force, permanently inscribed into its management system and culture. Enterprises should recognise knowledge and innovation management as their priority, which means that they will consequently concentrate their efforts on knowledge and innovations, therefore, they will use their skills in collecting information about consumers' and competitors' needs. It is also becoming necessary to constantly undertake research into the innovativeness of organisations, including the assessment of the realisation of the strategy, the effectiveness of cooperation in creating knowledge and implementing innovations.

Innovations are particularly important in Poland, primarily in the context of a significant contemporary conditioning of our economy, namely a decrease in the significance of the existing sources of the economic growth, such as: relatively low costs of labour, the availability of cheap raw materials, favourable geographical location, or benefits arising from the accession to the European Union. Therefore, it is necessary to look for new sources of competitive advantage. One of the key paths of maintaining a stable economic development is the development of innovations leading to the restructuring of industry and the introduction of new business models, particularly those focused on cost reduction or improvement of reliability in the eyes of customers. In particular, it concerns new organisational forms focused on an increase in the effectiveness of the use of available resources, and the resources can refer both to tangible and intangible assets, including the qualifications and motivations of the workforce, organisational culture, reputation or know-how.

However, the aforementioned conditionings cannot be treated only in global categories. Nowadays, with the development of local governments, the growth of civil rights, bigger and bigger autonomy of regions, relations occurring among organisations, institutions and enterprises are subject to considerable enhancement. The management system in a region takes into consideration five key determinants of development: competitiveness, entrepreneurship, innovativeness, finance management, investments. The mentioned factors are the main pillars of every regional policy, which should be a reflection of the needs, specific goals, preferences, and the hierarchy of values of a local community. In this context, also the role of tourism, which is more and more profitable economic sector, is growing significantly. The contemporary tourism is not a homogenous and coherent area of economy but a complex system. It is characterised by numerous relations with many areas of socio-economic life. On the one hand, tourism is a sphere of economic activity, and on the other hand a sphere of social activity, which is manifested in the fact that the development of tourism dynamises the socio-economic development of a country and enhances the economic structure by the generation of new jobs, restoration of the macro-economic balance and it positively influences the balance of payments. The sector also engages – due to its interdisciplinary character – several dozen sectors and areas of economy, at the same time becoming a motor of the regional and local development, and of an increase in the competitiveness of regions and the enhancement of the quality of living of local communities, and it stimulates various environments and endogenous potentials, releasing entrepreneurship and activity of communities. Tourism increases the awareness of local communities and their responsibility for their environment, creating social capital performing educational functions and creating attention to spatial order, aesthetics, and natural environment, and it contributes to the discovery of the most valuable cultural and environmental resources of the area of touristic reception and its promotion. As a result, tour-

ism contributes to the restoration of degraded areas and the development of problem regions and supports sustainable development by implementing new techniques, technologies and processes which consider the existing heritage and resources. Multiple functions of tourism and its role in the socio-economic life indicate that its development can be a chance for changes and structural transformations accepted by the population both from the areas of the reception of tourists and from the areas of the emission of tourists. On the one hand, tourism influences the development, employment, the use of space, etc., and on the other hand it is a source of meeting touristic needs and a measure of the quality of living.

The consequence of the aforementioned diagnosis of the economic environment and the needs with regard to the possibilities of conducting business activity effectively is becoming the need for changes in the process of managing contemporary economies and organisations. It refers both to the evolution of the management concepts, methods and instruments used so far, and to the implementation of totally new solutions within this scope. Hence, as its basic goal this publication adopted the presentation, analysis and exemplification of the conditionings of the functioning of the contemporary economy, the identification of its determinants and the presentation of the concepts, models and tools of the management of contemporary economies and organisations in the conditions of the changing economic, social and political environment, with special consideration given to changes in the tourism sector, as well as the role, goals and tasks of the process of the innovation and regional development. Partial issues responsible for the achievement of this goal are displayed in the form of the following three parts of the presented work:

1. Macro and microeconomic aspects of the functioning of the contemporary economy.
2. Innovation in the processes of the development of economies and enterprises.
3. Contemporary conditions and challenges of the regions and the tourism sector.

This book has the character of a theoretical and cognitive, as well as methodical study aimed at the presentation and classification of the scientific and practical output concerning the selected thematic areas, the discussion and critical assessment of this output and the presentation of own thoughts and proposals in respect of the analysed issues and problems[1]. Handing the discussed work

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[1] This work inscribes into the series of publications under the common title *Knowledge – Economy – Society*, which constitute one of the effects of many years' cooperation between the academic environment of the Faculty of Management at the Cracow University of Economics and employees and doctoral students of other faculties of the University, with representatives of different Polish academic circles, as well as representatives of foreign academic circles. See: *Knowledge – Economy – Society. Challenges of the Contemporary World*, Edited by R. Oczkowska, B. Mikuła, Faculty of Management of the Cracow University of Economics – Foundation of the Cracow University of Economics, Cracow 2011; *Knowledge – Economy – Society. Dilemmas of the Contemporary Management*, Edited by A. Malina, R. Oczkowska, T. Rojek, Faculty of Management of the Cracow University of Economics – Foundation of the Cracow University of Economics, Cracow 2012; *Knowledge – Economy – Society. Transfer of Knowledge in the Contemporary Economy*, Edited by P. Lula, B. Mikuła, A. Jaki, Faculty of Management of the Cracow University of Economics – Foundation of the Cracow University of Economics, Cracow 2012; *Knowledge – Economy – Society. Global and Regional Challenges of the 21st Century Economy*, Edited by P. Lula, B. Mikuła, A. Jaki, Faculty of Management of the Cracow University of Economics – Foundation of the Cracow University of Economics, Cracow 2013; *Knowledge – Economy – Society. Challenges of the Contemporary Management*, Edited by A. Malina, R. Oczkowska, T. Rojek, Faculty of Management of the Cracow University of Economics – Foundation of the Cracow University of Economics, Cracow 2013; *Knowledge – Economy – Society. Dilemmas of the Economic Resources Management*, Edited by R. Oczkowska, G. Śmigielska, Faculty of Management of the Cracow University of Economics – Foundation

over to the Readers we express our conviction that the publication in the presented form is fully justified, both for theoretical and cognitive, practical and didactic reasons. It can be a reference point for new thoughts, investigations, polemics, analyses and critical discussion on the presented problems. The commitment of the large circle of Authors enabled to present the discussed issues in a broad and multithreaded way. As scientific editors of this work we would like to express special thanks to all the Authors for accepting the invitation to co-create the publication and for sharing the results of their research with the Readers.

Renata Seweryn, Tomasz Rojek

PART I

MACRO AND MICROECONOMIC ASPECTS OF THE FUNCTIONING OF THE CONTEMPORARY ECONOMY

Chapter 1

Socio-economic Inequality as a Property of Complex Social Systems[1]

Czesław Mesjasz

1. Introduction

The challenges of social and economic inequality have been known since the onset of civilizations. Although already in the 21st Century several major works on that topic have been published (Sen, 1995; Stiglitz, 2012), a new impulse has been given to the discussion on inequality after the publication of research by Piketty and co-authors (Piketty, 2014; Piketty & Saez, 2014). That research was followed by others, e.g. (Stiglitz, 2015; Milanovic, 2016) and it was accompanied by more or less "shocking" reports and studies illustrating dramatic discrepancies of income and wealth in the world society (OECD, UNDP, UNU/WIDER, World Bank), including recent publication of Oxfam (2017) about the "Gilded Eight" owners of the lion's part of the humanity's wealth.

Since the first wave of publications, social and economic inequality are treated as most important challenges of modern society and as a significant area of research. It may be even observed that similarly as information, knowledge and complexity, the utterance "inequality" is treated as a kind of "buzzword" frequently used, abused and misused in the language of academia, media and policy making.

The above "grand" questions and similar ones cannot be given any universal answers. Narrowing the discussion to some preliminary issues, the paper aims at showing how modern systems thinking, and especially the ideas dealing with complexity of social systems, can be helpful in a better understanding of the phenomenon of sociopolitical inequality.

Although inequality is a common phenomenon worldwide, more attention is paid to the situation in the developed world, where poverty is not such a significant issue and where the "information revolution" has a greater impact.

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2. Complexity of social systems

2.1. Origins of the idea of complex systems

Complexity is undoubtedly one of most popular notions applied as a reference term in the discussions on ignorance in philosophy, sociology and in management theory and practice. The lack of clarity in defining complexity makes the discussion on the links between this term and knowledge and ignorance even more intricate. In his search for explaining the meaning of complexity, Lloyd (2001) identified 45 interpretations of this term. Studies of complexity are rooted in cybernetics and systems thinking[2]. The first attempts to define and study complex entities go back to the works of Weaver (1948) (disorganized complexity and organized complexity), Simon (1962) – The Architecture of Complexity, and Ashby (1963) – the Law of Requisite Variety. A very convincing picture of intricacy of the field of complexity science can be also found in the scheme proposed by Castelani (2014). In other writings numerous definitions of complexity have been formulated and scrutinized – Prigogine and Stengers (1984), Waldrop (1992), Kauffman (1993, 1995), Holland (1995), Bar-Yam (1997), Biggiero (2001), Prigogine (2003), Andriani, & McKelvey (2009).

Unequivocal distinction of complex systems from the "classical" systems is not possible. In the works by Wiener (1948/1961), Ashby (1963), defining "first order cybernetics" and 'hard' systems thinking Bertalanffy (1968) – without considering the role of observer, complexity was treated as one of important systemic features. In those works the first systemic/cybernetic characteristics of systems were enumerated: system, element, relation, subsystem, environment, input, output, feedback, black box, equilibrium, stability, synergy, turbulence.

In a preliminary approach complexity of systems derives from the number of elements and of their interactions. Furthermore, it can be also characterized by multitude of such traits as adaptability, adaptation, attractor, *autopoiesis*, chaos, bifurcations, butterfly effect, closed system, coevolution, complex adaptive systems, dynamical systems, edge of chaos, emerging properties, far-from-equilibrium states, fitness landscape, fractals, nonlinearity, open system, path dependence, power law, reflexivity, scale-free networks, self-organization, self-organized criticality, self-reflexivity, synergy, synergetics, turbulence. Those ideas are extensively depicted in a large number of writings of which only a small fraction are quoted in this paper.

Two important issues of complex systems studies demand further clarification. Firstly, in mathematical models applied in complexity studies, intricate behavior results from simple patters. It means that in order to understand complex dynamics identification of simple rules could be sufficient, e.g. the power law reflected also in the Pareto Law (Andriani & McKelvey, 2009). Secondly, complex systems exhibit non-linear behavior that is referred to as positive feedback, where internal or external changes to a system produce amplifying effects. Non-linear systems can generate a specific temporal behavior which is called chaos. Chaotic behavior can be observed in time series as data points that appear random, and devoid of any pattern but show a deeper, underlying effect. During unstable periods, such as chaos, non-linear systems are susceptible to shocks (sometimes very small). This phenomenon, called 'sensitivity to initial conditions' and popularized as the Lorenz's 'butterfly effect', exemplifies the cases, where a small change may generate a disproportionate change (Gleick, 1997). Ideas originated in systems thinking and com-

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[2] Relations between those two areas of knowledge require further elucidation. Due to variety of interpretations of their relations in this paper systems thinking is regarded as most general category.

plexity studies are used in social sciences as models, analogies and metaphors. According to this distinction, the term 'model' is narrowed only for mathematical structures. Mathematical models in complexity studies can be applied in three areas: computing-based experimental mathematics, high precision measurement made across various disciplines and confirming 'universality' of complexity properties and rigorous mathematical studies embodying new analytical models, theorems and results.

Models, analogies and metaphors are instruments of theories in social sciences and are applied for description, explanation of causal relations, prediction, anticipation, normative approach, prescription, retrospection, retrodiction, control and regulation, or in a modern approach, influence upon the system. Metaphors, even the "dead" ones, may have a significant heuristic value as stimulating factors for innovativeness. It is also worthwhile to add that models, analogies and metaphors deriving from systems thinking/complexity studies are gaining a special significance in the social sciences. They are treated as 'scientific' and obtain supplementary political influence resulting from 'sound' normative/prescriptive, legitimacy in any debate on inequality theory and policy.

Contrary to physics, chemistry and biology, where only mathematical models are applied in prediction, in social sciences it is also the qualitative considerations that are used in prediction. Therefore the role of analogies and metaphors taken from complexity studies must be taken into account with a sufficient care (Lakoff & Johnson, 1980/1995; Ortony, 1993).

All the above factors, i.e. the number of characteristics of systems, element, complexity and of their definitions, sometimes overlapping, sometimes even mutually excluding plus difficulties with identifying more or less clear distinctions between the areas of knowledge dealing with systems, e.g. cybernetics vs. systems thinking/approach/theory, etc., perfectly mirrored in the "Map of Complexity Sciences" (Castellani, 2014), contribute to reluctance in applying the terms "complexity science", "complexity theory". Instead, the terms complexity studies and complexity research are proposed herein.

2.2. "Hard" and "soft" complexity of social systems

The ideas depicted above can be called 'hard' complexity research as an analogy with the 'hard' systems thinking, and to some extent, with the 'first order cybernetics' (objects of research independent from observer). This research includes mathematical modeling of systems with well-defined, operationable (measurable) and computable characteristics in physics, chemistry, natural sciences and in society. The 'soft' complexity research, also coined per analogy with 'soft' systems thinking (Checkland, 2000) and 'second order cybernetics' (von Foerster, 1982), includes the ideas of complexity elaborated in other areas – cybernetics and systems thinking, social sciences and in psychology[3]. Contrary to "hard" complexity, they are not computable. Those ideas can be divided into two groups. The first group includes those, which are based upon analogies and metaphors drawn from 'hard' complexity studies. They are dominating in social sciences theory and practice being very often abused and misused (Gleick, 1987; Mesjasz, 2010; Castelani, 2014). The second group includes indigenous qualitative concepts of complexity like, for example, those elaborated by Luhmann (1995) – a complete indigenous definition; Cilliers (1998) – partly indigenous idea and partly based upon analogies and metaphors.

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[3]   Similar considerations concerning "soft" and "hard" complexity by Lissack (1999) are used as an inspiration.

Subjectivity is the first aspect of complexity in the 'soft' approach. Following this line of reasoning, from the point of view of the second-order cybernetics, or in a broader approach, constructivism (Glasersfeld, 1995; Biggiero, 2001), complexity is not an intrinsic property of an object but depends on the observer. Usually it is stated that 'complexity, like beauty is in the eyes of the beholder'.

3. Complex systems models and socio-economic inequality

The methods of modelling of socio-economic inequality are widely described in literature. Thus only a short introduction is needed. Qualitative studies of socio-economic inequality along with classical statistical models are not sufficient from a point of view scientific rigor. Empirical observations concerning wealth distribution were put by Pareto in a more universal framework of 80-20 rule already in early 20th Century. That is why attempts were made to elaborate mathematical models of socio-economic inequality, which may fulfill the demands of the neopositivist scientific rigor of analysis. It is only necessary to remind that it was not only the methods of measurement and interpretation, as for example, the Gini coefficient, but the models allowing for identification of causal links and for prediction. The rising interest in socio-economic inequality in the 1970s and in the 1980s coincided with development of complexity studies in which the Power Law is one of the main ideas.

Cumulative distributions with a power-law form are sometimes said to follow Zipf's law or a Pareto distribution, after two early researchers who championed their studies. Since power-law cumulative distributions imply a power law form for p(x), "Zipf's law" and "Pareto distribution" are effectively synonymous with "power-law distribution". (Zipf's law and the Pareto distribution differ from one another in the way the cumulative distribution is plotted – Zipf made his plots with x on the horizontal axis and P(x) on the vertical one; Pareto did it the other way around. This causes much confusion in the literature, but the data depicted in the plots are of course identical (Newman, 2006, p. 4). A general interpretation of the Power Law is presented in Figure 1.

Figure 1. Comparison of the Gauss distribution with the Power Law
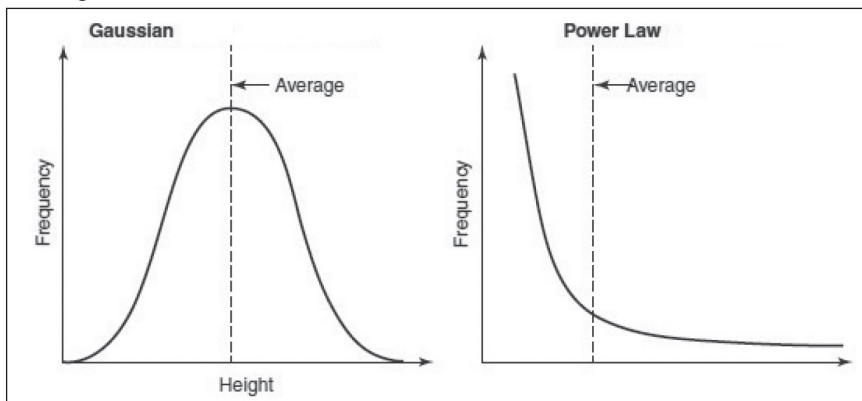
Source: own research.

The Power Law has multiple application in modelling various phenomena in physics, biology, society, linguistics, urban studies, etc. It has become both a fundamental model of socio-economic inequality as well as a source of metaphors and analogies. The most significant aspect of the Power Law is that to some extent it reflects the situation in society, in which the groups of privileged receive majority of resources. This picture is simplified but it reflects a certain rule existing in social systems. A distribution based on a power law says extreme events (or richest people, or biggest websites) account for most of the impact in that particular world, and everything falls off quickly afterwards.

A striking feature of the income distribution predicted by Pareto's law is its extremely skewed nature, with the frequency distribution declining monotonically, beginning at a minimum income. This was referred to by Pareto as the "social pyramid", and brings us to the question of the connection between the observed hierarchical structure of most societies and their income distribution. From the start, Pareto emphasized the heavily asymmetric character of his distribution and hence its fundamental difference from a normal curve (Persky, 1992).

A more significant comment must be added. Empirical results of research done in physics, chemistry, natural sciences and in social studies show an interesting regularity which can be labelled as a shift from the Gaussian world to the Power Law world. This phenomenon can be initially described as a situation in which it is not an average which matters but the rare and the unpredictable, which is at the same time very influential upon other elements of the system under study.

First of all it must be underlined that the Power Law distribution is not ubiquitous in any relations of socio-economic inequality. Empirical studies found a power-law behavior in the distribution of income in Australia, Germany, India, Italy, Japan, the UK, and the USA. Another group of studies discovered a Power Law structure of the upper tail of modern wealth distributions in China, France, India, Sweden, the UK, and the USA (Brzeziński, 2013, p. 2). However, as it was exposed by this author, detecting the Power Law distribution in the empirical data on inequality is not simple. Therefore a complete empirical analysis would require conducting a statistical comparison of the Power Law model with some other candidate distributions. Using recently developed empirical methodology for detecting power-law behavior introduced by Clauset, Brzeziński (2013) has found that top wealth values follow the power-law behavior only in 35% of analysed cases. Moreover, even if the data do not rule out the power-law model usually the evidence in its favor is not conclusive – some rivals, most notably the log-normal and stretched exponential distributions, are also plausible.

Applications of the Power Law distribution in the inequality study has become an important of research of econophysics. In addition to the use of the above models wealth inequality are applied: chemical kinetics motivated Lotka-Volterra models, polymer physics inspired models and most importantly, models inspired by kinetic theory of gases (Chatterjee et al., 2015). Those applications have some merits but they may not be treated as a more "scientific" proof of the theses concerning inequality of wealth distribution.

One of most influential ideas of complex research applied also in the studies of socio-economic inequality are the scale-free networks elaborated by Barabási and Albert (Barabási & Albert, 1999; Barabási, 2003). After finding that various networks, including some social and biological networks, had heavy-tailed degree distributions, Barabási and collaborators coined the term 'scale-free network' to describe the class of networks that exhibit a power-law degree distribution, which they presumed to describe all real-world networks of interest. They have been extensively applied in studying the topology of internet, social networks and in all cases where relations between actors

may have a network-like character. One of most important characteristics of scale-free networks is the "preferential attachment". It means that those objects of the network are gaining more links since they are gaining more links. In reference to socio-economic inequality it may mean that a kind of "eigendynamik" of inequality is stemming from the fact that those who are more privileged more frequently enter into the relations among themselves.

This phenomenon was commented by authors studying the validity of network models in studying socio-economic inequality. Buchanan (2002) calls the random networks "egalitarian" and the scale-free networks "aristocratic" (2002, p. 119). Here appears the "rich get richer" phenomenon that is supposed to be valid for all networks in nature including the economy and the larger society (Barabási, 2003, pp. 79-92; Buchanan, 2002, pp. 106-120, 192-195). Positions of actors in scale-free networks are not equal and hubs (most often selected nodes) are the "spiders in the net" (van Dijk, 2005, pp. 150-151).

Even before the presentation of the free-scale networks Castells (1998) anticipated the growth of inequality in the network society. According to him, networks are characterized by a "space of flows" that overwhelms and pervades the traditional "space of places". Networks of capital, labor, information and markets, linked up through technology, valuable functions, people and localities around the world, while switching off from their networks those populations and territories deprived of values and interest for the dynamics of modern capitalism (Castells, 1998, p. 337).

The scale-free networks have also another important attribute contributing to their high importance in the analysis of socio-economic inequality in modern information society. Those properties were partly discussed by van Dijk (2005). In most cases of inequality with the Power Law models, the data reflect physical units. It means that the "hard" complexity, neopositivist approach is applied. In the case of networks more attention should be given to a different character of complexity, which has a more constructivist character. First and foremost it can be observed that network relationships in society are of pure constructivist character. There are two ways of defining networks. In the first one an observer identifies relations between behavior various elements – individuals, groups and put them into the network. In this case, the network has at least a partly tangible foundation although its intersubjective character is also visible. The second type of network is purely intersubjective. For example, if on the basis of my readings a specific type of scholarly works, say, devoted to socio-economic inequality, the search engine assigns me to a network of readers of literature on that topic, it's predominantly the effect of activity of an observer. In this case the network is symbolic and, according to the previous considerations, we enter the world of intersubjectively created meanings. It means that such a network is exposed to the impact of the Information Society but it is also exposed to the impact of information overabundance. So the problems of "soft" complexity come to the fore. In such case the impact of "preferential attachment" can be extended. In information society exposed to information overabundance the inequality in access to information, or in other words, to symbolic resources could be even more differentiated. It means that the future Information Society could bring even a deeper differentiation and inequality. This is obviously another conjecture but it obtains a new meaning when the prospects of automation of manufacturing and increasing professional demands for the workers of the future are discussed.

4. Conclusion

The above preliminary survey of theories and empirical evidence about socio-economic inequality reflecting the complexity of the issue and appealing for new theoretical explanations based upon complexity studies, allows for drawing a rank of conclusions referring to all complex societies but predominantly to the rich developed societies.

1. Hierarchical structure of societies constitutes a natural vehicle for differentiation in access to the resources, both physical and intangible. It also concerns opportunities. It is not an ethical or ideological problem but it results from "*Eigendynamik*" of complex social systems. Ideological and ethical considerations constitute a part of the modern societies dominated by intangible social constructs developed in an intersubjective process of negotiating of meanings.
2. In rich developed Information Society affected by information overabundance, in which basic needs are fulfilled, the phenomena associated with socio-economic inequality are mainly of intangible, symbolic character and they can be even treated as *simulacra* (Baudrillard, 1994). As long as physical resources are in sufficient supply such a situation seems stable.
3. Contemporary concepts of complex systems studies based upon advanced interdisciplinary studies, linking, for example, good knowledge of complex adaptive systems, high competences in cognitive science, plus familiarity with advanced qualitative ideas of systems theory, could to make the studies of socio-economic inequality more useful from the point of view theory and policy making. It should be added, that any expectations for the "big solutions" often proposed in systems thinking research movement are naive and unproductive.

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Chapter **2**

European Integration as the Engine of Economic Development: A Comparative Analysis

Danijela Durkalić, Katarina Zdravković

1. Introduction

Economic integration is a process of cooperation among the countries (regions) to achieve the economic benefits, especially effective international flow of people, capital and products. Leading of economic integration means an economic policy related to achieving better social and economic outcomes than those that could be achieved without the existence of integration. Expected benefits are connected to the increase of total regional prosperity of the continent.

Integration is the improvement of the country relating to the political, economic, social and other relationships. Integration is followed by various agreements, and the initial agreement was usually free trade, with aim of creating a single economic space. There are different forms and methods of formation regional integration, depending on the interest of the countries that enter into it (Kumalić, 2014).

Economic integration can achieve a number of benefits to the economy and society. They can be viewed through the following contributions (Antevski, 2007):
- secure access to the markets of the partner's countries;
- increased investment opportunities;
- increased competition;
- reduce inefficiencies in business firms;
- exploiting economies of scale;
- strengthening the services sector;
- to facilitate the exchange of technical information and knowledge;
- give incentive for research and development activities;
- increasing the available volume of goods and services for consumers;
- coordination of economic and other policies among the member countries;
- enhanced negotiating position with third countries and trading blocks.

During the identification of gains from economic integration, it should be taken into consideration the dynamics of the arrival of gains. Most often benefits are seen in the terms of maturity.

In the short term there is a growth in the volume of trade and GDP. From the point of medium and long term, there are structural changes, changes in the qualifications of the workforce due to mobility, increased employment and the economies of scale has primacy. Gains from integration can be divided into (Antevski, 2007):

- Static (Static are strongest immediately before and after the establishment of integration) and
- Dynamic (dynamic prevail after a period of adjustment and growth in the long term).

European integration and economic development are very important interrelated categories. First of all, developed countries have an interest that economic situation in the less developed countries increase due to the growing influence of globalization. Developed countries initially found out that the negative effect from one country will lead the other in the same direction because of trend of globalization. For this reason we can say that all countries are mutually interested in economic unification and integration of the "great European community".

2. Literature review

The effects of economic integration are the subject of a large number of authors. Some of them can be singled out as interesting effects on economic growth, inflation and unemployment (Siebert, 1997; Gruner & Hefeker, 1999; Ardy et al., 2002; Ferragina & Pastore, 2008; Galati, Poelhekke & Zhou, 2009). Current issues are the effects after joining the European Union and the European Monetary Union (Guerra, 2016; Tang, 2016).

Henrekson, J. Torstensson and R. Torstensson (1997) investigated the effects of the European Monetary Union on growth. Analyzing Solow's traditional growth model and using the regression equation, these authors came to the conclusion that membership of the European integration (EU and EFTA) has a positive and significant effect on the growth rate. The study did not matter whether the country is the member of one or other integration. When inflation, the budget deficit (% of GDP) and public expenditure (% of GDP) are included in the regression, the coefficient is not significant and is reduced. Such a situation may point out to lower inflation rates in Europe.

Rivera-Batiz and Romer (1991) were analyzing the issues of economic integration to increase economic growth in the long term. According to these authors, the benefits of integrated economies are reflected through broad base of knowledge in relation to the isolated country. Also, integration is forcing the country to develop innovative technologies on a global level, not only on the domestic market, which improves industrial development. Also, izolated markets and companys provide space for the development of monopoly rather than competition. However, when it comes to integrated market, companies do not have the luxury to choose between innovation and not innovation (Baldwin, 1993). There can also be extracted the studies which use time series and cointegration analysis. Thus, for example, the results of Coe and Moghadam (1993) indicate that the 0.3 per cent growth rate in France in 1980 can be attributed to membership in the European Union.

European union represents the possibility for achieving high level of economic integration together with maintenance of the political sovereignty of the participating countries. Markovic (2009) points out that the arguments such as security of democratic development, strengthening market economy, regional stability, are some of the frequently mentioned in the literature and practice. EU membership would certainly contribute to the development of democracy, since it is defined as a necessary condition for reception. So, Dezséri (2007) said that the most important political and economic benefits of EU membership have been the following: joining a group of countries

of higher economic development can boost the economic development, being member of a community can promote and guarantee political stability and security, being part of the largest market of the world can improve the competitiveness in the world markets, integrating in the EU can provide modernization impetus and EU financial support.

Apart from the indisputable benefits of European Union enlargement based on fundamental ideas of European unity, there are also difficulties associated with integration that should be solved. European Union enlargement by Central and Eastern European countries (CEECs) in 2004 and 2007 as well as enlargement by Croatia in 2013 brought higher demands for common policy coordination. It also increased the complexity of decision-making mechanisms and of reaching a common consensus. Regarding EU enlargement in 2004, Zielonka (2007) notices that the hierarchical governance structure has become insufficient and suggests delegating authority to specialized institutions. In addition, Delhey (2007) points out that EU enlargement brought about a decline in social cohesion between the old and new EU countries within the EU3.

Membership in the EU leads to the reduction in the autonomy of Member States in the conduct of macroeconomic policy, to increasing interdependence of economic policies, but there were general expectations that the net effects of integration can be positive. The newest EU member states were willing to sacrifice part of their national sovereignty in the field of economic policy and to accept the logic of achieving interests in the long term.

Dragan (2006) realize that unlike the previous enlargements, which had taken place in the context of a divided Europe, the 2004/2007 enlargement was the first to address the issue of Europe's reunification.

According to Europe Commision (2009) the enlargement, by hastening the pace of structural reforms, has also better prepared Europe to embrace the benefits and tackle the challenges of globalization by making it more competitive in the world. An enlarged EU also carries more weight when addressing issues of global importance such as climate change or the international financial crisis. Overall, the accession of 12 new Member States has increased the weight of the EU in the world and made it a stronger international player, in both economic and political terms. The accession process has contributed to significantly improve living standards in the new Member States, fostering economic and social cohesion within the Union. Income per capita rose from 40% of the old Member States' average in 1999 to 52% in 2008. It is estimated that the accession process boosted economic growth in the new Member States by about 1¾ percentage points per year over 2000-08, when growth increased from 3½%, on average, in 1999-2003 to 5½% in 2004-08. Growth in the old Member States also benefited from enlargement (adding up to a cumulative increase in output of around ½% over the same period), in particular in those countries that increased trade with and investment in the new Members. Since 2004, robust growth in employment of about 1½% annually in the new Member States went alongside strong employment creation in the old Member States (about 1% per year since enlargement). The degree of trade openness in the new Member States has reached a very high level. Their average GDP share of exports and imports now amounts to 56% of GDP, up from 47% before enlargement.

3. Methodology

The initial step in this phase of research is the selection of macroeconomic indicators that will be ranked. Based on previous empirical studies (Soukiazis & Castro, 2005; Yin, Zestos & Michelis, 2003), this paper will be consider following macroeconomic indicators:
1. GDP per capita,
2. Unemployment rate,
3. Net inflow FDI,
4. Inflation rate,
5. Population growth rate,
6. Gross capital formation (% of GDP),
7. Government expenditures (% GDP).

Table 1. Data Sources

GDP per capita (C1)	Unemploy-ment rate (C2)	Net inflow FDI (C3)	Inflation rate (C4)	Population growth rate (C5)	Gross capital formation (% of GDP) (C6)	Government expenditures % GDP (C7)
EUROSTAT[1]	EUROSTAT[2]	World Bank[3]	IMF [4]	World Bank[5]	World bank [6]	IMF [7]

[1] GDP per capita, Real expenditure per capita (in PPS_EU28): http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=prc_ppp_ind&lang=en,

[2] Unemployment rate percentage of active population,

[3] http://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD,

[4] World Economic Outlook Database, April 2017, Inflation, average consumer prices, Percent change,

[5] Population growth (annual %),

[6] Gross capital formation (% of GDP): http://data.worldbank.org/indicator/NE.GDI.TOTL.ZS,

[7] World Economic Outlook Database, April 2017, General government total expenditure.

Source: own work.

Calculation of indicators was done using available statistical data of relevant organizations and institutions, and all data sources were used to obtain mentioned 6 indicators expressed as a percent. The obtained data will be used statistically in the next step of analysis – the ranking of the data and determining the rank of the individual countries or groups of countries. For the ranking of data will be used software package *Decision Lab 2000*.

Taking into consideration that the issue of European integration is domain of multi-criteria analysis, it is necessary to reduce set of criteria into single criterion, in order to properly compare data. Such possibility for comparative analysis provides PROMETHEE & GAIA methodology developed by the Canadian company Visual Decision. As an adequate method for solving the multi-criteria problem, aim of PROMETHEE GAIA methodology is to rank a finite set of alternatives (in this case countries) based on the criteria that should be maximized or minimized. In the case of this study, the criteria are mentioned indicators (Brans & Mareschal, 1986).

Ranking by using preferences is the most preferred method for making the multi-criteria decision (Tomić, Marinković & Janošević, 2011). For each alternative (country) calculates the value

of these alternatives expressed in preferences, which have positive and negative flow. On the basis of the calculated preference, net flow of preferences is being calculated, which synthesizes all the indicators and based on that, ranks alternative (country) (Tomić, Aljinović & Pivac, 2010).

4. Discusion and results

The aim of this paper is comparative analysis of the countries that joined the EU in 2004 and 2007. The analysis includes one year before the access and the year of access, in order to detect changes in economic parameters before and after joining the EU.

Figure 1. GDP per capita (PPP) in EU accession countries in 2003
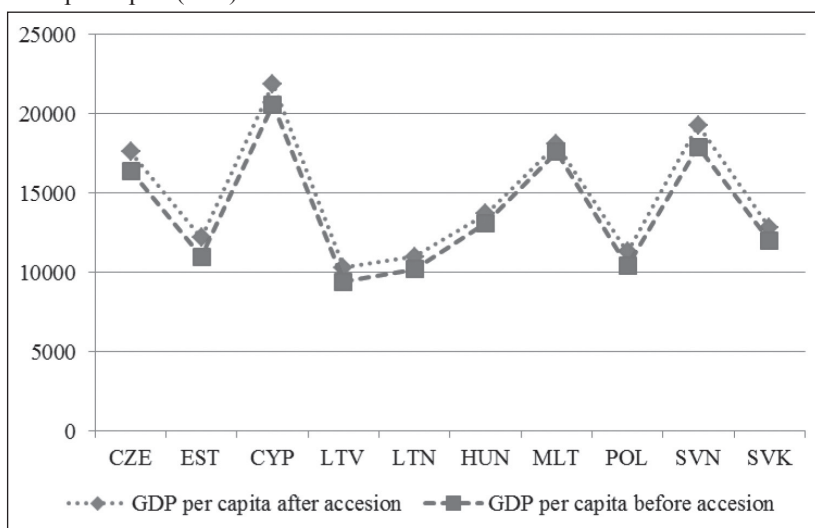
Source: own calculation based on Eurostat data.

In the period before the biggest enlargement of the EU, the highest level of GDP per capita (PPP) had Cyprus, Malta and Slovenia. Among the countries with the lowest level of GDP per capita (PPP) is Lithuania, Latvia and Poland. Although there were divergent values in terms of this indicator, all the observed countries in the coming period acceded to EU. After joining the EU, the scenario in terms of GDP per capita (PPP) has not significantly changed.

Figure 2. Macroeconomics variables in EU accession countries in 2003
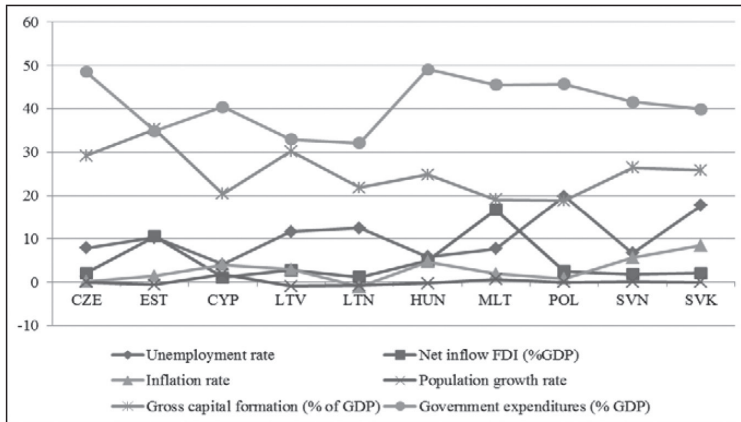
Source: own calculation based on Eurostat, IMF, WB data.

Other macroeconomic variables are shown in Table 3, which shows that all countries show high levels of public expenditure (% of GDP). Poland stands out as the country with the highest unemployment rate of all the surveyed countries, while Malta stands at the highest rate of FDI (% of GDP).

Table 2. Rank EU countries in pre accession period 2003

Rank	Country	Phi	Rank	Country	Phi
1	IRE	0,4321	15	DEU	0,0194
2	LUX	0,4289	**16**	**CZE**	-0,0014
3	AUT	0,2419	17	DEN	-0,0502
4	BEL	0,2345	18	ITA	-0,0739
5	NDE	0,2255	19	HRV	-0,0873
6	**MLT**	0,1436	**20**	**SVN**	-0,1349
7	ESP	0,1395	**21**	**HUN**	-0,1404
8	UK	0,1107	22	GRE	-0,1786
9	FIN	0,07	23	BUL	-0,1921
10	SWE	0,0538	**24**	**LTN**	-0,2114
11	PRT	0,0524	**25**	**LTV**	-0,2443
12	FRA	0,0313	**26**	**POL**	-0,2501
13	**CYP**	0,0242	**27**	**SVK**	-0,329
14	**EST**	0,0218	28	ROU	-0,336

Source: own calculation based on Visual Promethee program.

Using these parameters with Decision Lab Program and including the rank of countries that joined the EU in 2004, it can be noticed similar value indicators that are related to GDP per capita. As noted, Malta, Cyprus, Estonia and the Czech Republic were well above some of the countries that were already members of the European Union. The Baltic countries had generally the worst ranking.

Figure 3. Macroeconomics variables in EU accession countries in 2004

Malta had the best indicators shown as total net foreign direct investments. It is still remarkable progressive growth of public expenditure as well as the unemployment rate in some countries. However, the rate of population growth is low in all the countries in 2004.

Table 3. Rank EU countries in accession period 2004

Rank	Country	Phi	Rank	Country	Phi
1	LUX	0,3823	15	CZE	-0,0077
2	NDE	0,2835	16	SVN	-0,0353
3	BEL	0,1998	17	EST	-0,0499
4	UK	0,1968	18	PRT	-0,0854
5	IRE	0,191	19	GRE	-0,1198
6	MLT	0,1751	20	LTN	-0,1579
7	FIN	0,1687	21	HRV	-0,1714
8	SWE	0,1633	22	DEU	-0,177
9	CYP	0,1446	23	HUN	-0,1804
10	ESP	0,1154	24	SVK	-0,1896
11	AUT	0,0917	25	ROU	-0,2212
12	FRA	0,017	26	LTV	-0,2321
13	ITA	0,003	27	BUL	-0,2323
14	DEN	-0,0042	28	POL	-0,2681

As can be seen in Table 3, it was nine countries that accessed EU in 2004, and this counties were ranked in second half of 28 countires, with the exception of Malta and Cyprus. Poland, along with Romania and Bulgaria (which will get into later, in 2007) had the worst indicators, due to low per capita GDP in the observed period. Malta and Cyprus, due to the high FDI and low unemployment rates, have achieved 6 and 9 positions, compared to the entire European Union.

After enlargement in 2004, in consideration will be taken and 2007. As a reminder, this year Romania and Bulgaria joined the European Union. For this reason, the review will take years before the accession to the EU in 2006 and the year of EU accession 2007. Although it had previously been ranked higher than some EU member states, Bulgaria and Romania joined the EU only in 2007, rather because a qualitative indicators of the economy than because of quantitative economic indicators.

Table 4. Descriptive statistic for EU28 in 2007

	GDP per capita PPP (C1)	Unemploy-ment rate (C2)	Net inflow FDI % of GDP (C3)	Inflation rate (C4)	Population growth rate (C5)	Gross capital formation % of GDP (C6)	Government expenditures % GDP (C7)
Minimum	10600.00	3.80	-58.98	0.70	-1.48	18.50	33.10
Maximum	68400.00	11.20	10.08	10.08	2.89	41.54	52.23
Average	25521.43	6.53	3.29	3.29	0.33	27.11	41.85
Standard Dev.	11233.22	1.98	2.24	2.24	0.88	5.48	5.76

Source: own calculation based on Visual Promethee program.

Mentioned countries in the observed two periods showed improvement nearly of all observed economic indicators. This is particularly applies to GDP per capita, which in the case of Bulgaria increased from 9400 international dollars in 2006 to 10600 international dollars in 2007. However, in both periods, GDP per capita is the lowest compared with the whole current EU. In the case of Romania's GDP per capita increased from 9700 international dollars in 2006 to 11100 international dollars in 2007.

Figure 4. Net preference flow for Bulgaria
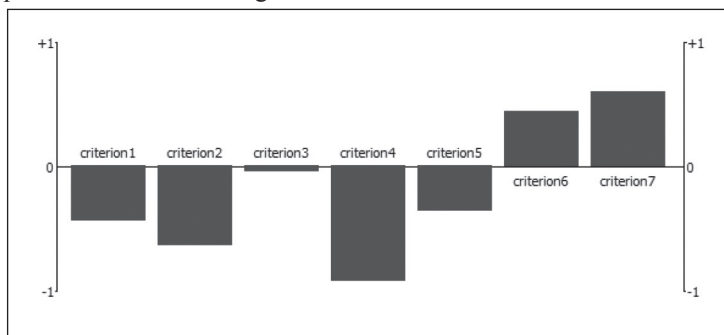
a) In 2006
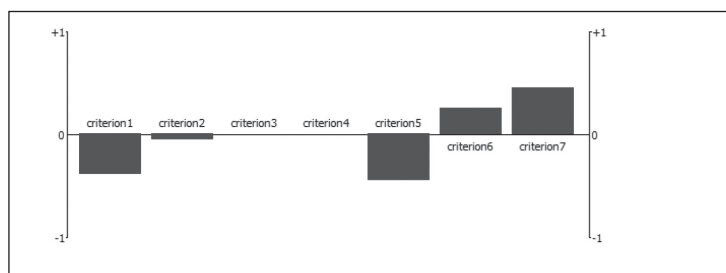
a) In 2007

Source: own calculation based on Visual Promethee program.

Regarding to other indicators, Bulgaria experienced a slight increase in FDI. However, inflation is still a problem for the new EU countries. Namely, in Bulgaria, inflation increased from 7.42% (the highest in the EU) to 7.57%. Romania had something better indicators of inflation in 2006 and 2007, with 6.59 and 4.83%, respectively.

Figure 5. Net preference flow for Romania
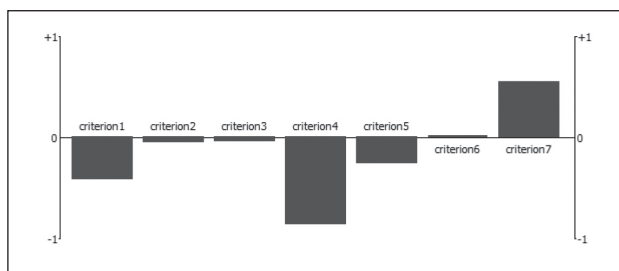
a) In 2006
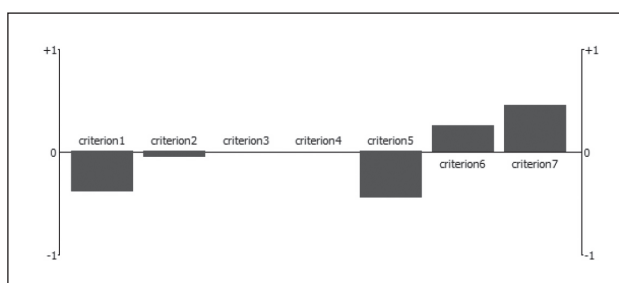
a) In 2007

Source: own calculation based on Visual Promethee program.

Domestic investment (measured through gross capital formation) in the case of Bulgaria had a slight shift of 1%, while in Romania increased by about 4%. Regarding the last indices – public expenditure as % of GDP, in Romania there was a slight increase in public spending to less than 2%, and in Bulgaria public spending increased by less than 1%.

Based on all presented criteria and alternatives (countries) can show the general ranking of all EU countries in 2007 in order to create a picture of all range: rank for new member states compared to the older member states.

Figure 5. General rank for whole EU28 in 2006 and 2007
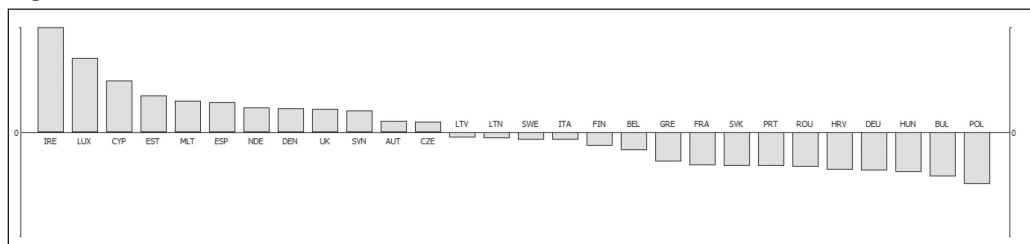
a) In 2006
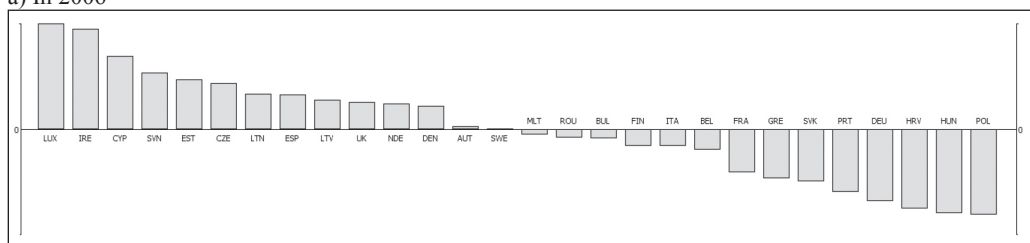
a) In 2007

Source: own calculation based on Visual Promethee program.

Based on the presented data, given alternatives and criteria, the final ranking shows significant improvement in criteria especially in Romania and Bulgaria, which in 2006 were ranked among the last 5 countries and in 2007 had 16th and 17th place. Poland, as well as in the period of accession, had economic imbalances, also in the 2007 is in the last place. Cyprus, Malta, Estonia, Slovenia and the Czech Republic have strengthened their positions from the accession period while Slovakia and Hungary are among the last 6 countries.

5. Conclusion

In addition to creating the internal market and common currency, one of the main objectives of European integration is similar the development of the member countries. Economic integration aims to create a single market where countries will be similar to each other in words of economic development or to achieve convergence in nominal and real terms. Large disparities among countries cannot achieve the goal of integration, or, only a balanced development of all Member States may allow the development of the Union as a whole.

In the observed study, it is interesting to point out that countries which were not EU members in 2004 achieved a better ranking compared to some of the countries that joined the EU in 2004 (such as Poland, Slovakia, Hungary). This indicates that these countries have not joined the EU in 2004, as it was planned, rather because a qualitative reasons than because quantitative economic

indicators, which are reflected in problems with corruption, inefficient implemented structural reforms, etc.

Overall, it can be concluded that the benefits of European integration for every country are different and depend on the stage of the economic cycle in which the country is. Benefits particularly be seen in Bulgaria and Romania, which have significantly strengthened their economic position by joining the EU. For the future research, study leaves open the question of the current trends of the same indicators and their comparative analysis with the period of accession to the EU, which is especially interesting after the economic crisis.

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Acknowledgements

Chapter 3

Sector-specific Stimulation of Integration into Global Value Chains: Experience for Ukraine

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1. Introduction

At the Los Cabos Summit in June 2012, the G20 leaders noted the importance of regional and global value chains for world trade and recognized their role in stimulating economic growth, employment and development, as well as the need to increase the participation of developing countries in such value chains. GVCs manifest especially in the sphere of high technologies in the form of distributing the production of added value between developed (technology producers) and developing countries (producers of goods on the basis of technologies). Preserving current and developing new positions in GVCs is necessary for a country's reinvesting its contribution to the development of technology by means of importing finished products produced on its basis. Thus, a country's strategy of participation in global chains, especially in creating high technology goods and services, is the basis for its economic growth in modern conditions.

In the conditions of growing global rivalry in all areas of world development, from economics and politics to values and ideology, demography and the environment, an external system of factors, which form the conditions for the functioning of national innovation systems, exerts an ever growing influence. Twenty years ago, the leading countries in innovative development, the advanced countries of the world, could solve the task of strengthening their competitive advantages either within national borders or in the usual conditions of interaction with countries of the "golden billion", which have close social and institutional foundations of scientific and technological development. In modern conditions, when industry, science, technology, information and even management become global, conflicts and contradictions of a fundamentally new nature arise. These contradictions may not always be removable by traditional methods of national policy.

The "national" policy of any state now is now required to adapt the state's innovative system to the rapidly changing realities of globalization, to strengthen its own key advantages for an "asymmetric" response to competitors, to combine the strategies of "open innovation" with new mechanisms for supporting own radical innovations and compensating for "failures" of both the market and the state itself. The faster this complex adaptation takes place, the greater are both the potential success and risk from participating in international division of labor in the form

of GVCs. Considering the ongoing transformations in the world economy, it is important for our country to study the world's leading countries' experience in stimulating innovative development of promising economic sectors aimed at identifying possible methods and tools for creating a national strategy for future economic development.

2. The posing of problems

Combining the theories of innovation development and global value chains is, in theory, quite a rare phenomenon. But the practice of a number of countries in the field of innovation policy shows that it is possible. Important works on the impact of national and regional innovation systems on the development of developing countries have been produced by the following authors: Arocena and Sutz (2000, pp. 55-75); Cassiolato, Lastres and Maciel (2003); Gereffi (2005, pp. 78-104); Lundvall et al. (2009). The sectoral systemic approach of F. Malerba (2011, pp. 1645-1675) should also be noted, since it provides an opportunity to understand how national and sectoral characteristics are linked by international trade relations and lead to innovations and economic development. It should be noted that the view of experts in innovation systems is usually focused at the national level, while the approach of specialists in the sphere of GVCs is inherently global. But today's realities of a transforming world system actualize the need for a synergistic unification of these approaches. Hence, analyzing successes in GVCs from the perspective of the national innovation context, as well as the role of the state and its intervention in the economy, requires a more detailed research.

The aim of the research is to analyze and to characterize the comparative features of supporting innovative development in industries with high added value, for the purpose of integrating promising sectors of Ukraine's economy into global technological chains and optimizing the innovative development of said sectors.

3. Results

The characteristic features of knowledge-intensive industries that determine their role in the economy and the potential for the formation of GVCs are: growth rates, which are 3-4 times greater than in other industries; a large share of value added in the final product, significant export volumes and high innovative potential, capable of supporting not only that industry, but also related ones (Omelyanenko, 2016). The functioning of such industries results in a synergistic effect created by the spreading of innovations in national and world economies. These key qualities of high-tech industries make them a priority field for global innovation activity, as well as the main object of risk capital investments.

Let's consider the basic sectoral tools of innovation policy aimed at supporting the integration of national actors into GVCs on the example of the leading countries in the world economy: the USA, Great Britain, Germany, France, Japan and China.

Despite statements about the key importance of the service sector as the basis for the development of the "post-industrial" economy in the US, the US manufacturing industry, especially the high-tech sector, remains the driving force in the development of the US' national innovation system. The manufacturing industry provides about 70% of all non-government spending on research and development and up to 80% of all patents; its development has a multiplicative effect

on the economy – including the knowledge-intensive sector. And although, as in most developed countries, there is a gradual decline in the share of manufacturing in the US economy (from 17.4% of GDP in 1991 to 12.1% of in 2015) and in the structure of employment (from 13.3% In 1991 to 7.1% in 2015) (Measuring America, 2015), America remains a world industrial power, and its manufacturing industry a technological leader.

In recent decades, however, the development of America's manufacturing industry has been showing mixed trends. A number of quantitative indicators has deteriorated significantly. In 2010, China surpassed the United States in industrial products output (in terms of value added), becoming the world leader. Due to global competition and off-shoring, the US' share in the global production of high-tech goods fell from 31% to 28.7% (in terms of value added), and in global exports of high-tech products from 20.9 to 17.6% (Science and Engineering Indicators, 2016). Since the late 1990s, the deficit in trade of high-tech products has been growing steadily (the first deficits were recorded in 1986 and 1993) and reached about $ 120 billion by 2012 (Science and Engineering Indicators, 2016). Moreover, while before the 2000s technological "consumer goods" were the main category of imports, since 2002 there have been deficits in trade of so-called advanced technology products – a category introduced in US statistics to distinguish the most significant high-tech products from "secondary" ones.

Due to offshoring, the number of enterprises decreased sharply (from 397.5 thousand in 2001 to 344.4 thousand in mid-2010), and, according to a number of evaluations, valuable groups of competencies and important sections of technological chains were lost (Pisano & Shih, 2011). This largely concerns small and medium-sized technological enterprises, which "emigrated", following customer enterprises and subcontractors. At the same time, some experts speak about a threat to the innovative potential of American firms in the conditions of a "gap" between the functions of innovation development and material production, which occurs due to growing outsourcing of production processes and/or off-shoring. The fact that US President D. Trump, elected in November 2016, outlined the objectives of reviving industry within the territory of the United States, sharply reducing imports of manufactured goods from China, Mexico, and tax support for domestic producers also characterizes the need to resolve the situation. Combined with the promise not to support new global projects in the field of trans-Pacific and transatlantic trade and investment cooperation, as well as the refusal to support the Paris climate agreement, the new American president proposes to alter the modern vectors of globalization, which will undoubtedly change the ideology and tools of the country's innovation policy.

Partnerships between various actors of the innovation process are the main principle of the industrial strategy being implemented in the UK since 2013. The development of a new sectoral policy was accompanied by a large-scale expert work – a large number of surveys, polls, and a major Foresight project on the development of industries with high added value due 2050. The strategy provides for priority stimulation of innovative development in 11 sectoral sectors of three types, which are assigned the role of "Locomotives" of British growth, while maintaining support of other industries: progressive industries with the greatest value added, sectors that provide new habitat and knowledge-intensive services. It is important to note that, for the first time, such priorities include the agrarian-technological sector and international educational services. The list of sectors with "blurred boundaries" reflects the results of the transformation in Britain's structure of industry that took place during the 1990-2000s – a transition to industries with high added value, including services. At present, knowledge-intensive industries account for about one-third of the gross value added and one-fourth of employment.

In turn, the English digital sector "sprouts" on the basis of creative industries' intensive development, which is based on national specialization in the service sector. In 2014, the creative sector contributed 5.2% of the gross value added to the country's economy, and the average annual growth rate of the sector far exceeds the growth rate of Britain's economy as a whole (6.0% and 4.3% respectively for 1997-2014). The British creative sector is the most dynamic in comparison with other EU countries: the UK is leading in the EU in terms of growth rates (growth rates in the EU28 – 5.21%), and in the value of creative products' exports per capita (Nathan, Pratt & Rincon-Aznar, 2015).

"Catapult Centers", a new mechanism of the modern innovation policy, are designed to overcome the negative feature of the British innovation system – dispersal of funds, lack of a critical mass of resources, "remoteness" from the customer. Also important is their local effect – being centers of attraction for new clusters and value chains within regions, thanks to close links with local entrepreneurial partnerships. At present, 9 centers have been established on the basis of leading universities, which specialize in the priority areas and provide sites for joint projects with the industry. The largest is the High Value Manufacturing Catapult (HVMC), created as part of the plan to double the industry's contribution to the GDP in the next 10 years. The center is based on 7 university research centers operating in 5 regions of the country (Innovation Report, 2014). Other centers operate in such fields as new energy systems, the use of space satellites, future transportation systems and cities, the digital sphere, precision medicine, cellular therapy and medical technologies.

In general, the new policy can be characterized as a hybrid one, in which state support for priority sectors and technologies is combined with innovative development in a broad selection of directions. The first steps of the new UK government, formed after Brexit, indicate the intention to continue implementing this strategy, the tasks of which will be clarified due to the country's withdrawal from the EU.

Germany – a country that, in the 21st century, has strengthened its high indicators of global industrial competitiveness and is a leader in developing a number of newest directions in machine building and "green" energy – is characterized by the persistence and universal character of the instruments of industrial and innovation policy.

Technological innovations are inextricably linked with the industrial sector. The industry of Germany has good competitive positions in the world: in 2014, the share of exports in Germany's industrial production amounted to 46.3% (EFI – Expertenkommission Forschung und Innovation, 2016). More than half of the German exports fall on cars and their components, machine tools and equipment, chemical products, equipment for data processing, radio electronics and optical instruments. In 2014, Germany's index of identified comparative advantage for was 14, that is, Germany was more active in exporting goods with a higher share of innovative development than in importing them (in comparison with other goods). At the same time, a detailed analysis shows that advantages of Germany lie only in the field of high-tech goods (29), whereas more goods with advanced technologies get imported than exported (-24) (Tab. 1).

Table 1. Index of comparative advantages in the field of exports for some countries *

Year	China**	Germany	France	United Kingdom	Japan	South Korea	USA
Technological goods							
2000	-41	11	7	14	47	0	13
2005	-29	10	7	14	42	17	17
2010	-27	12	6	11	33	19	1
2014	-28	14	7	4	36	18	7
High-tech goods							
2000	-17	27	5	10	86	5	-13
2005	0	27	6	4	75	11	-5
2010	-16	30	-2	15	61	7	-10
2014	-12	29	-5	5	72	17	-6
Goods with advanced technologies							
2000	-66	-27	11	19	-10	-5	47
2005	-53	-34	8	33	-14	24	55
2010	-35	-35	20	1	-22	33	22
2014	-42	-24	24	2	-34	19	29

*The positive value of the index means that the ratio of exports to imports of the corresponding type of product is higher than the average for industrial products
** With Hong Kong

Source: EFI – Expertenkommission Forschung und Innovation, 2016.

Despite the fact that the tertiary sector (services) has been contributing more to economic growth in recent years, industry is the basis for the services sector as well: more than half of all services are services for business. As shown by analyzing the interbranch balance, 1/3 of all the services are purchased by industrial enterprises as "intermediate goods", i.e. about 3.8 million jobs in the tertiary sector depend on the industrial sector (that is, about 10% of all jobs in the country) (Edler & Eickelpasch, 2013). This is explained by the changed nature of industrial production: the transition to high technology means that more and more specialists with a qualification typical for the service sector (IT, design, etc.) are required for the production of industrial goods. In addition, in the XXI century, the relationship between the buyer and the seller of equipment or household manufactured goods continues after the transaction: the increasing importance of after-sales services means an increasing role for the service sector. As a result, in Germany, the number of tertiary sector employees providing services to enterprises increased by 138% between 1991 and 2013, and added value by 47%. At the same time, the modern industrial sector is characterized by a high proportion of employees who perform the work of the services sector (more than 50% of all employed in industry). The more technological the production, the higher the share: in pharmacology – about 90%, in the chemical industry – 80% (Der Dienstleistungssektor in Deutschland Überblick und Deregulierungspotenziale, 2015).

The state pays particular attention to small and medium-sized enterprises, which, being included in the value chains of large German companies, affect the efficiency of the economy as a whole. State programs to support small and medium-sized enterprises are also aimed at solving social problems in the regions. As a rule, such enterprises experience a much more acute shortage of highly quali-

fied personnel than large ones: they are less known to university graduates, and often the region where the company is located may appear unattractive and out-of-date. Spreading information about "hidden" champions due to competitions and state programs partly solves this problem.

In France, the creation of innovative clusters, or poles of competitiveness (les poles de competitive), became the most important instrument of the industrial policy. These clusters represent geographically localized associations of enterprises (from large to small), research and educational institutions centered around joint projects with a strong innovation component and a common development strategy. This partnership is closely connected with the market, is tied to a specific scientific and technological direction and is aimed at finding the critical mass that leads to competitiveness and international importance (according to the definition provided by the Inter-ministerial Department for Development and Territorial Competitiveness – DIACT).

Currently, the third phase of state policy regarding these competitiveness poles is being implemented (2013-2017). In addition to the unsolved problems of the first and second phases, such as the development of private financing, comprehensive assistance to small and medium-sized businesses, actively involving start-ups etc., the applied importance of innovative development projects for the national economy is being strengthened. The poles of competitiveness, according to the government's plans, should turn from factories producing projects into factories for the production of new products, services and technologies. They should be actively included in the process of creating added value and re-industrializing the country, becoming an important tool for implementing the strategic program "New Industrial France". However, the ten-year activity of the poles shows that, in practice, this goal is not easy to reach, as the commercialization of activities contradicts in many respects their original purpose, the development of cooperation through joint innovation development projects. According to some estimates, only 25% of these joint projects generated innovations in the the period from 2008 to 2011 (Bellégo & Dortet-Bernadet, 2014).

The most notable sectoral component of innovation policy can be observed in Japan, a country with highly developed engineering, chemical industry, electronics, and energy branches. These industries were most successful in the late twentieth century; a relative decline in competitiveness began afterwards. The government sees the way out of the long economic stagnation occurring at the beginning of the 21st century in activating the development of traditionally strong and new industry branches. One of the priorities of the National Strategy is "robonomics" – a significant expansion of the production and use of intelligent robotics in industry, energy, transport, agriculture and households.

Automobile manufacturing is one of the most innovative and knowledge-intensive sectors of the industry. It has become an integrated supply chain consisting of a multitude of companies with different specialization. Every vehicle that comes down the assembly line consists of components made by hundreds of different supplier companies. According to data from 2015, the industry employs 5.5 million people, or 8.7% of Japan's total workforce (including related industries) (The Motor Industry of Japan, 2015). To date, there are 78 automobile assembly plants in 22 prefectures of Japan.

Forming close ties with small and medium-sized innovative enterprises is becoming the key direction of improving the production organization model. Producing cars involves using components from a wide range of industries: textile, chemical, electronics, mechanical components, etc. It is at this level that innovative SMEs begin to play an important role by forming supply chains. Thanks to them, car manufacturers significantly reduce expenses on non-core operations and carry out, mainly, the general management of designing future cars, develop designs and perform

the final assembly. The most capital-intensive operations, including research and development, are performed by first-tier suppliers, known as Tier-1 – the highest of the three existing supplier categories. They get involved in the research process, together with the automobile manufacturer, in the earliest stages of developing the concept of a future car. These suppliers and developers provide the final product with the necessary performance, develop complex software and hardware solutions, etc. The largest manufacturer of auto parts in Japan is Denso, specializing in the development of electronic systems and power unit control modules. This company, one of the leading TNCs in its segment, supplies various car manufacturers in Europe, China and North America (Supplement to Automotive News, 2015). Among other well-known Japanese suppliers of the Tier-1 category, also scoring high in rankings, are such large companies as Yazaki, Aisin Seiki, Hitachi Automotive Systems, JTEKT.

In order to increase participation of small and medium-sized innovative enterprises in creating value chains, the Industrial Value Chain Initiative (IVI) was formed in 2015 through cooperative efforts of private sector representatives and the academic sector. Its main task is to develop a unified system of technical standards for using the Industrial Internet of Things (IIoT) in the production process and equipping Japan's factories (METI Journal, 2015) with the technology of cyberphysical systems. The virtual association of large companies with small and medium-sized businesses should have a positive, stimulating impact on the growth of performance indicators. At the same time, Japanese experts do not deny the fact that the selected technology has been to a certain extent borrowed from Germany, where "smart factories" operate within the framework of the initiated economic development program "Industry 4.0".

For example, of such a technology, the company Fanuc announced in 2016 the launch of an intelligent information and technology platform "FANUC Intelligent Edge Link and Drive system", which serves to connect large production machines and industrial robots with peripheral devices providing consumables and other sensors for monitoring the production processes. The use of the platform will allegedly increase the productivity and efficiency of any manufacturing sector, reduce labor costs, fill labor shortages, reduce the cost of goods with high added value, and shorten production time. It is expected that about 10 thousand units of production equipment will be connected to the system by the end of 2016 (The Motor Industry of Japan, 2015).

In China, the largest and most successful country in the developing world, industrial policy initially had a strong sectoral bias, determining the goals and targeted means for the development of those sectors, which should, according to the visions of economic modernization ideologists, reduce the gap in economic development between China and the world's leading countries, then achieve an equal position, and even assume leadership in the global economy. In the most recent five-year plan – the thirteenth, adopted in 2016 – industrialization is called the "new engine" of the national economy's new development, alongside with informatization, urbanization and modernization of agriculture. The plan also points out that industrial enterprises should be encouraged to perform innovative development and utilize all resources of global innovation chains (Koleski, 2017). And it is precisely on the example of the manufacturing industry that the risks associated with a strengthened emphasis on targeted measures of innovation policy with Chinese specifics can be shown.

Guided by these attitudes, against the background of countries' with advanced economies deindustrializing themselves, China has been deliberately restructuring its archaic industry, turning the country's economy into a modern industrial one, thus striving to follow the path completed by world economic leaders several decades before in the shortest time possible. For a quarter

of a century, China has been building up and modernizing its industrial potential, similar indeed to some other developing counties. However, China is an absolute leader in the scale of this buildup. In 2010, the country became the largest producer of industrial products in the world, getting ahead of the former leader – the United States. The share of value added in the Chinese industry amounted to 20.8% of the world index in 2014, which fully characterizes the scale of the country's industrial economy (OECD Science, Technology and Industry Scoreboard, 2015, p. 29).

At the same time, the industry's structure has changed radically in favor of modern high-tech industries, which were initially assigned the role of recipients of advanced countries' technological achievements. As it is known, China had in a short time turned into an "assembly plant" for foreign companies, primarily for manufacturers of mass high-tech products. To date, the country has taken a more "prestigious" place in the global value chain in high-tech processing industry: China has become the main supplier of intermediate components to countries of Southeast Asia, and has outperformed Canada and Mexico in terms of supplying components to the US, reaching values similar to those of Germany. China, however, lags behind its key competitor in the Asia-Pacific region – Japan (OECD Science, Technology and Industry Scoreboard 2015, p. 16, 47). This indicates that industrial sites located in China have achieved a decent quality of production.

A stable increase in Chinese exports of high-tech goods can be observed. The main increase occurred in the period from 2000 to 2006, as this indicator grew from 20% of total exports in 2000 to 30.5% in 2006. In 2008, there was a decline (down to 25%) connected to the financial crisis, after which the indicator continued growing on average by 1% annually, albeit not uniformly. The volume of exports had also been growing steadily: from $49 billion in 2001 to $558.6 billion in 2014 (Xing, 2011). At the same time, export items coincide with imports: computer and telecommunications equipment, electronics, and optoelectronics were being both imported and exported.

However, despite China's successes in industrial development, as soon as it comes to the qualitative characteristics of production and exports and not their volumes, China still can't be called the world manufacturing leader. Exports of final high-tech products from China are still largely based on imports of unique components and assemblies (OECD Economic Surveys. China, 2015, p. 29). About 80% of goods exported from China are made from components produced in advanced countries, in particular Japan, South Korea, the United States, and Germany. In addition, products developed in China have a very small share in the export structure; foreign companies' investments provide about 80% of China's exports. A prominent example of this situation is the export of Apple products from China – they are counted as high-tech exports from China, but almost all the components are supplied from Germany, Japan and the US (Xing, 2011).

Chinese economy's indicators of innovation are also low, which can't but affect the quality of industrial growth. So, despite high patent activity, the utilization of patents is at an extremely low level of 5% (OECD Economic Surveys. China, 2015, p. 37). Even according to Chinese authorities, only 30% of innovative development's results get implemented in practice, while in developed countries this figure reaches 70% (Made in China 2025: Finding a China Heart for Robots, 2015).

1. It is thus natural that China's share in the volume of global industrial exports, measured in terms of value added (13%), is lower than in terms of costs (14%), and this distinguishes it from other leading players on the world market – the USA, Germany and Japan (OECD Science, Technology and Industry Scoreboard, 2015, p. 47). This means that China is still lagging behind the leaders in terms of the level of innovativeness and technology density of production. It should however be noted: China is actively striving to enter their club and is growing the volumes of high added value products development. It is among the six countries that have

the largest number of patents related to modern breakthrough technologies, in particular, to the "Internet of things". In this list, China follows Germany and France, even though the largest share of patents – 65% – still belongs to the top three: the USA, Japan and South Korea) (OECD Science, Technology and Industry Scoreboard, 2015, p. 15).

4. The conclusions and recommendations for further research

The conducted research has shown that the set of tools of sectoral innovation policy is characterized by a combination of selective sectoral stimulation and improving "horizontal" institutional support for innovation activity. The characteristics of modern policies common to most of the analyzed countries can be distinguished:

- targeted support for industries that have lost competitive positions as a result of the deindustrializing processes (in a number of developed countries) or that provide new goals for economic growth (ecology, sustainability, inclusiveness);
- selective support for priority areas of innovation development on the frontiers of technological progress;
- strengthening the regional component, creating innovative clusters based on the principles of "smart specialization" and supporting small and medium-sized enterprises (SMEs);
- development of integrated national documents (strategies, plans, forecasts) that, being aimed at solving the problems of national scientific and technological development, determine the optimal characteristics and instruments of regulation.

At the same time, integration of industrial and innovation policy instruments takes place; general methods of economic stimulation are reconfigured towards solving problems of technical progress and innovative development. The Ukrainian economy, instead of building up opportunities across the whole range of industrial activities, should focus on getting adequate shares in GVCs. With this in mind, it is first of all necessary to support the priorities of innovative and institutional development at the national level. In the case of innovative development, priorities are to be set both from the point of view of sectoral tasks (new directions, technological leadership in priority areas, participation in GVCs), and of sectors' functions as subsystems of the socioeconomic development of Ukraine's economy (addressing issues of security, health, ecology, energy dependence). In the case of institutional development, it is tax incentives and assistance to small businesses, a "roadmap" for long-term changes, implementation efficiency indicators and proposals for implementing a new innovation policy in state, regional and corporate policy documents, laws and by-laws.

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Chapter **4**

Changing Views on Organizational Control in the Countries of the Eastern Bloc[1]

Juraj Mišún

1. Introduction

Control is the terminal sequential function of management and its importance has risen during the last economic crisis. In the Eastern approach of organizational control, a manager can be either the subject of control, when he oversees an object or the object of control, when another subject oversees him. The subject and object do not need to be necessary from the same system, which means that this is a case of external control. The meaning of external and internal control in the Western approach is different and the internal control is in the Eastern approach called self-control.

In Slovakia and many other Eastern European countries (generally known as Eastern bloc), control has also a dark side of its history, thanks to the communistic regime. This can result to negative views from managers who remember the use of control by the regime. Based on two questionnaire surveys of 2014/2015 and 2016/2017 we examine the changing views of managers, as the number of executives who did not experienced the era of communism is increasing. Given the limited size for the article, it will deal only with the views of managers when they are an object of control. In addition to this goal, we point out some differences between the theory of organizational control in Western and Eastern countries.

2. Theory of organizational control

Organizational control is in addition to planning, organizing, staffing and leadership one of the so-called sequential management functions. Also due to its status as the last step of the management process, it is the least researched function. Based on the study of literature, much more attention is paid to the other sequential functions. From parallel managerial functions, the decision-making function enjoys also more attention. In 1977, for example, Ouchi pointed out that the functions of organizing and control were not enough insufficiently differentiated in theory. Despite the fun-

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damental nature of this phenomenon, its importance and some significant progress, this scientific area is still neglected. Specifically, control is poorly captured in its constructs, determinants, and effects (Sitkin et al., 2010). "We lack an integrated conceptual framework to understand, visualize, and analyze control issues" (Flamholtz, 1996).

The gaps in theory persisted despite control's very long history. The word control comes from ancient Rome and evolved from the concept of "contra rotulus", which we freely interpret as a counter-scroll (Majtán et al., 2003). Part of its history has also been the semi- and fully-automated control, helping people make their lives easier and more comfortable for millennia. Its early days are dated to the third century BC with the development of the first (water based) clock (Lewis, 1992). We are currently witnessing constant monitoring, whether for the benefit or the failure of our future. Privacy, for example, is losing on importance in the name of security.

Fayol brought one of the first definitions of managerial function of control in 1949, when he stated: "control of an undertaking consists of seeing that everything is being carried out in accordance with the plan which has been adopted, the orders which have been given, and the principles which have been laid down. Its object is to point out mistakes in order that they may be rectified and prevented from recurring". Anthony later defined control as the process through which managers ensure that resources are procured and used efficiently and effectively to meet the goals of the organization. Among the Slovak authors, Kráčmar et al. (2013) define control as a specific, multi-step activity, which provides information for correcting plans and supporting decision makers through the control process.

At first sight, control may appear to be the last phase of the management process, but it does not correspond to reality. It is a truly dynamic function and is interrelated with the other management functions. It includes corrective actions based on the analysis of deviations in the performed performance from the desired results. A corrective action may include a review of objectives, strategies, procedures, plans, organizational structure, etc. This aspect of control establishes the interaction relationship between it and other management functions. It means that control affects other managerial functions, and is ultimately affected by them (Agarwal, 1982). Relationships of controlling and the other functions of management are shown in Figure 1[2].

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[2] Here, as well as elsewhere in the article, we quote some literature from India. In this regard, it is necessary to point out that due to the colonial past of India, we cannot include this country among representatives of the Eastern approach to control in management. Nearly all of the studied works have a clear connection to British and American literature.

Figure 1. Relationships between controlling and other management functions[3]
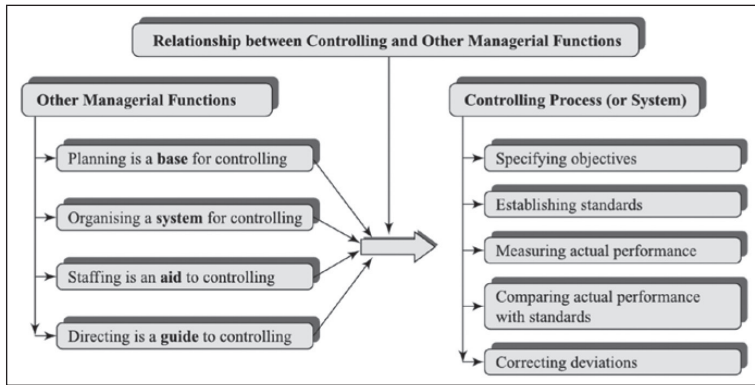
Source: (Rudani, 2013, p. 680).

The controlling function of management can be a critical determinant of organizational success (Merchant, 1982). Failures in control can lead to large financial losses, damage to reputation, and even to the failure of the entire organization (Merchant & Van Der Stede, 2007). Its importance derives from its versatility as well as from many implications of how organizations behave (Tannenbaum, 1965). Through control, companies try to increase the probability that individuals and groups will behave in a way that will lead to organizational goals. This means that control is purposeful and its purpose is to influence people to take action and make decisions that are in line with the organization's goals (Flamholtz et al., 1985). Control is an incentive for the subject of management to ensure dynamic balance by new decisions (Konečný, 1998). In order for the control process to be meaningful, organizations need to be aware of and have the ability to adjust the situations they identified as out-of-control. Otherwise, control does not serve any purpose (Atkinson et al., 2012). It is important to recognize that the control function of management is present in all processes running in the company. If its techniques and procedures change, it never changes its substance, that is, how to use resources appropriately and efficiently to achieve planned outputs and to get closer to achieve the strategic goals of the company (Petřík, 2005). According to Merchant, Van der Stede and Zheng (2003) control represents the ending of the management process.

Terms like management accounting, management accounting systems, management control systems, and organizational controls are many times used interchangeably. "In general, management accounting refers to a collection of practices such as budgeting or product costing, while management accounting systems refers to the systematic use of management accounting to achieve some goal" (Chenhall, 2003). Management control system is interpreted broader and besides management accounting systems, it includes other controls such as personal or clan controls (Brenner, 2009). Unfortunately, management accounting is currently gaining in popularity (both in theory and practice) and is often considered more important than the management function of control. This leads to negligence of control by managers, as they rely heavily on the information provided by managerial accounting. In addition, qualitative aspects of activities get neglected, as they are not sufficiently evaluated by managers.

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[3]   Directing is often used in the literature as a synonym for the managerial function leadership. Rudani uses in his scheme a five step control process.

Symptoms of an out-of-control company, as listed by Bateman and Snell (2015), include lax top management, absence of policies, lack of agreed-upon standards, "shoot the messenger" management, lack of periodic reviews, bad information systems, and lack of ethics in the culture.

In general, effective business without control can hardly exist. However, as Merchant (1982) argues a possibility of eliminating the need for control can be found, namely by automation of activities, centralization of decision-making, risk sharing to other entities and termination of business unit or the enterprise.

In the case of control, the issue of its volume is very important. A sufficient number of controls can prevent organizations in such types of issues as theft, fraud and unintentional errors. However, adding more controls may not always lead to a generally better situation in companies. Some commonly used control systems often suppress initiative, creativity and innovation (Merchant & Van der Stede, 2007).

Domestic theory divides functions of control according to the social sphere, which is relevant to the function (economic, technical, ecological, social, psychological function), and in terms of the content of human activity and its meaning in general (cognitive, influencing, educational function) (Kráčmar et al., 2013). In the Western approach, Griffin (2012) for example, has a different division of functions of control (adapting to environmental change, limiting the accumulation of error, coping with organizational complexity, minimizing costs).

Although control is very important for a successful business, it does not work completely without problems. Barriers or difficulties in control include difficulty in setting quantitative standards, no control over external factors, resistance from employees, costly affair, human problems, difficulty in fixing individual responsibility, lack of knowledge in controllers (Singla, 2010).

Authors of the Western approach to control mostly states three different types of control: feed-forward, concurrent, and feedback controls (Schermerhorn, 2011 or Williams, 2012). There are some variations, like preliminary, screening, postaction control (Griffin, 2016), but mostly with the same meaning. The Eastern approach has a much more elaborated typology, based on three main kinds of control, as shown in Figure 2. Not just in this case, the Eastern approach's emphasis is on formal control. Western approach relies heavily on internal control, which is in the Eastern approach called self-control.

Figure 2. Typology of control in the Eastern approach
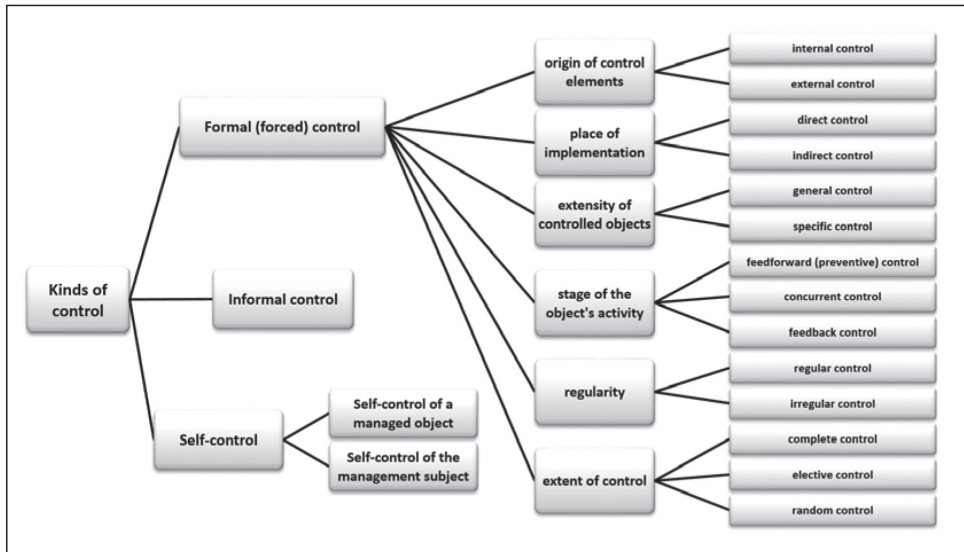
Probably the biggest difference between the Western and Eastern approach to control can be found in the concept of internal and external control. The same meaning, both in Western and Eastern approach, has the concept of internal and external audit. For an external audit, the subject and object do not come from the same system and are independent of each other. However, internal control in Western approach is strongly influenced by internal auditing, while in the Eastern Bloc, the audit did not began to actually develop until the early 1990s.

In the Western approach, "since Rotter (1954) first introduced his theory of social learning, there has developed an extensive body of research surrounding the central construct of locus of control". While the perceived internal locus of control believes one's personal belief has influence over outcomes through his skills, abilities, and efforts; the external locus of control believes that external forces can control outcomes (Kaufmann et al., 1995).

In the Eastern approach, "control can be classified as external control and internal control from the perspective of control subject". External control means that the controllers are from the outer environment of the organization (subject and object come from different organizations). Examples include controls from government sector, financial control, taxation control, government audit control etc. (Zhang, 2014).

From the basic control theory, it is also appropriate to mention the control process. In the early domestic theory, we have a distribution into eight steps; by comparing it with foreign (Western) authors, we could call them as partial steps in the control process. In the Western approach, there are four (let us call them) general phases, namely the determination of performance standards, performance measurement, performance evaluation, and corrective action, if necessary (includes no activity, problem solving or adjusting the standards) (Montana & Charnov, 2000 or Scher-merhorn, 2011, just to name few). While the Eastern approach is in this particular area slowly

moving towards the Western approach, some Western authors try reducing the number of steps in the general process by excluding the step of setting of standards. Control process by Robbins and Coulter (2012) for example does not need the setting of standards, because goals and objectives for the entire organization, individual divisions, different departments, or individuals were predetermined in the planning process. However, this implies a perfect planning process, which can cover all aspects of managerial work. In order to return to the partial steps of the control process, the general steps are preceded by (1) the determination of the matter of control, (2) the acquisition and selection of information for control, (3) the verification of the accuracy of the information obtained; and are followed by (8) reverse control (Kráčmar et al., 2013).

Although Robbins (in many of his works) does not accept the determination of standards as a separate step in the control process, he offers probably the best scheme explaining the control procedure in an organization with showing the different decisions in the control process (Fig. 3).

Figure 3. Managerial decisions in the control process
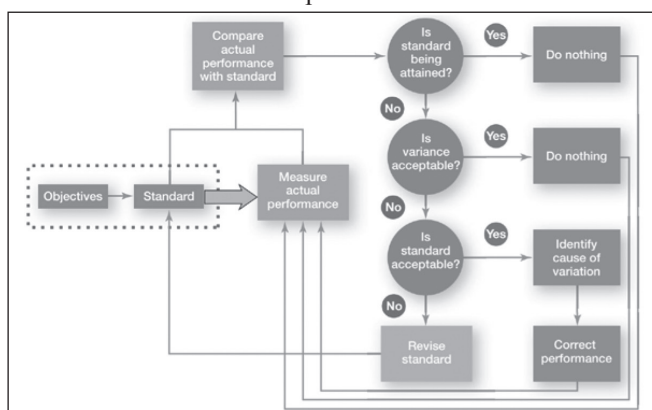
Source: (Griffin & Coulter, 2012, p. 491).

In the domestic literature, we find different approaches to the understanding of the term control, namely regulatory, negative, professional, informational, educational, repressive, cybernetic, and complex. It is ideal if the managers look at control complexly, but in practice we meet with the fact that they often deviate from this ideal. In the professional approach, they leave control to other persons or institutions. In a repressive approach, they abuse control to treat their inferiority complex. In an information approach, they only get information, but forget to act or leave the decision to someone more important. In the regulatory approach, they do not see the importance of preventive action. We see many negatives, but control should not cause negative feelings to be able to develop all its benefits. One of these approaches is educational, which aims to improve further development by pointing to errors during the process, with penalties following at repetitive errors.

Let us end the theoretical part of this paper by listening of major differences between Western and Eastern approaches to control shown in Table 1. Although this contribution may give the impression that it compares in particular the theory from Slovakia with the US theory, it is not. Slovak Republic has long been a part of Czechoslovakia, and the theory of management of these countries has been influenced by the theory of the Soviet Union. In addition, the comparison is based on newer works from countries ranging from the Czech Republic to China (for example Zhang, 2014).

Table 1. Major differences between the Western and Eastern approach to control

Aspect	Western approach	Eastern approach
Types of control	mainly feedforward, concurrent, and feedback controls	sophisticated typology with the accent on formal control (as shown in Fig. 1)
Forms of control	bureaucratic/administrative, clan, and market control	verification, control survey, supervision, inspection, review, audit, operational research
Steps in control process	mainly three to four	five to eight
Meaning of external control	a manager controls an employee	an entity outside the organization controls its operations, results or state
Meaning of internal control	an employee or a manager controls himself or herself	a manager controls an employee
Level of control	strategic, managerial/ management, operational	deficiently covered in literature
Object of control	results, actions or personnel	systems that may be target-influenced (social systems and man, technical systems, biological and inanimate systems)

Source: own work based on a large number of Western and Eastern literature.

3. Methodology

At the University of Economics in Bratislava, specifically the Faculty of Business Management, the General management study program (master's degree) has been developed in recent decades. Its aim is to provide students with the widest possible knowledge in business management. In order to meet this goal, courses that specialize in individual management functions began to emerge gradually. At present, there are separate courses for planning, organizing, staffing, leadership, control, and decision-making. Due to the specialization of individual members of the Department of Management in education, the next logical step was their identical specialization in research as well. This contribution is the result of the specialization of one of the members of the department on the management function of control.

Aim of this paper is to examine the changing views of managers on being controlled, as the number of executives who did not experienced the era of communism is increasing. In addition to this goal, we point out some differences between the theory of organizational control in Western and Eastern countries. With the planned continuation of this research, the results are still preliminary. Slovak Republic can serve as a good example, given that it does neither belong to the highly conservative nor very liberal countries of the former Eastern bloc.

Results presented in this paper come from two separate questionnaire surveys. The first survey of the perception of control by Slovak managers was carried out as part of a larger research of external control in Slovakia at the turn of 2014 and 2015. The questionnaire consisted of four main parts that served to evaluate the results of the sample survey: company identification, managers' general attitudes to control, specific experience with external control of the company, and information on external control

in general. For this paper, only the second part is relevant, as it focuses on the respondent's attitude towards control. Of 337 completed questionnaires, 284 questionnaires were left for further processing.

The second questionnaire survey collected data at the turn of 2016 and 2017. It switched from external to internal control and was the first to be a part of the then freshly accepted research project devoted to internal control. Questionnaire's emphasis is on new trends in organizational control. Following the experience of the first questionnaire, the respondents were better specified, resulting in better returns and data that are more relevant. Overall, 395 completed questionnaires were received, of which 376 were further processed and 19 were excluded for various reasons. Although there is with many companies an overlap in the research sample, neither the questioned companies nor the respondents are the same. Both samples (Tab. 2) do not represent statistical representativeness for the Slovak Republic but are compatible with their parameters.

Using a range of positive, neutral, negative, respondents had to evaluate their attitude to control, both when controlling (they are subject to control), or when they are controlled (they are the object of control). In both cases, we asked respondents for a short justification. This also helped us to resolve question-naires from inadequately competent respondents. A third questionnaire is planned for 2018/2019. We used standard scientific methods in evaluating and interpreting the results of our questionnaire surveys.

Table 2. Description of the research samples[4]

	Questionnaire	
	2016/2017 (376 total)	2014/2015 (284 total)
	Number of employees in the previous year	
microenterprises	115	130
small	96	86
medium	62	37
large	103	31
	Management level of the respondent	
higher	120	115
middle	62	30
lower	147	74
informed employees	47	65
	Higher territorial unit of Slovak Republic	
Bratislava (BA)	210	79
Trnava (TT)	36	18
Nitra (NR)	25	44
Trenčín (TN)	26	27
Žilina (ZA)	31	42
Banská Bystrica (BB)	17	51
Prešov (PO)	22	8
Košice (KE)	9	15

Source: own work.

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[4]   The other characteristics of the sample were name of the company, sales of the previous year, economic result in the previous year, object of activity, legal form and seat of the company, but they are not necessary for the purpose of this paper.

4. Research results

In this section, we will look at our latest research results and compare them with previous results later in order to discover potential trends.

First, we look at the overall results for 2016/2017. At first glance, they are very encouraging: 193 respondents express a positive attitude to control when they are an object to it, 151 of them expressed the neutral attitude. Only 32 respondents have negative associations to control when they are controlled by another subject. The results should indicate that there are no major problems with the management function of control (Fig. 4).

Figure 4. Overall attitudes to control in role of the object of control
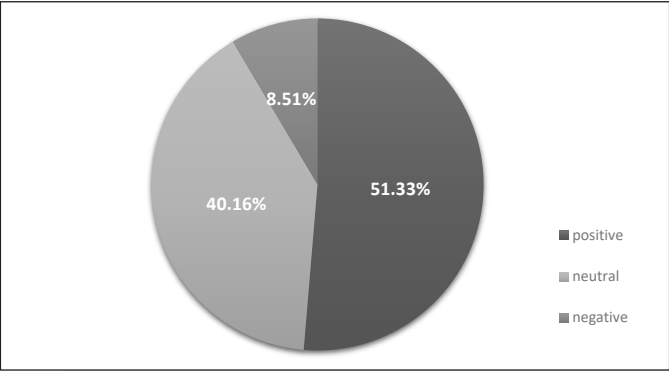
Source: own work.

However, the results need to be seen in more detail. Since positive or neutral attitudes to control do not signal problems, it is important to focus on negative attitudes and to make a deeper analysis. To proof our point, we can mention just few justifications of positive attitudes to the control function (Tab. 3, rows 1-3). Let us therefore proceed with the analysis of attitudes according to selected characteristics of the research sample. First, we approach respondents' views according to the size of the business, in which they are active. As can be seen in Figure 4, the most negative perception of management function of control is in the case of microenterprises. Twenty-two respondents coming from this category do not see much positive on control.

Table 3. Attitudes to control of selected respondents when they are object to control

	Attitude	Justification	Respondent description
1.	positive	"No one is unmistakable, feedback is important for us in the working process".	owner/small machinery industry company/TN
2.	positive	"When control does not detect any shortcomings I work correctly, on the contrary, if shortcomings are found I know what to avoid in the future".	service manager/ large trading company/ZA

3.	positive	"Feedback is essential. Anyone who perceives control as a "warning" of what he/she does good or bad to move in his work and improve his performance for the future, can only gain from it. The one who sees control as criticism stagnates. Excessive control, however, is annoying. Everything should be done within the norm, and one should know the limits".	project manager/ small market research institute/ BA
4.	negative	"This type of activity is being controlled mainly by state authorities and can be heavily fined in case of non-compliance".	executive/ accounting microenterprise/BA
5.	negative	"From the view of a client it is always unpleasant and the consequences of the inconsistency of the employees are taken by the owner – manager, as the sole responsible person".	owner/agricultural microenterprise/ZA
6.	negative	"I do believe that control is important, but I consider the state control negatively, based on my own experience".	owner/trade microenterprise/PO
7.	negative	"Control by the managing company. Constantly filling of reports that resemble but are demanded by other departments. Everything can be obtained through the bookkeeping that happens abroad".	accountant/courier microenterprise/BA
8.	negative	"Negative, because of my experience. Controls take time, and since I try to keep everything in order, it is often unnecessary bureaucracy".	owner/solarium microenterprise/PO
9.	negative	"External control is not pleasant to me; I think it is an intimidation. When it comes to controlling compliance within a business, it's ok".	executive/ consulting microenterprise/BA
10.	negative	"State authorities control often hinders free entrepreneurship".	owner/catering microenterprise/TN
11.	negative	"Mostly, these are state control bodies (Slovak Trade Inspection, Bureau of Customs, etc.). This is most of the time bullying on their part as I abide all laws. Still, they are constantly trying to find something to sanction me".	owner/trading microenterprise/BB
12.	negative	"Controls are looking for shortcomings that I do not consider being essential. We have always been able to remedy or eliminate them in a short time. I see it unnecessary and exaggerated to entrepreneurs who try to work on the labor market self-help and employ people in their field".	executive/small construction company/NR
13.	negative	"Given that we have a Korean management => lack of information, poor cooperation".	production planning manager/ large automotive supplier/TN

14.	negative	"Since the results we report to senior management and the methods we use to measure the results are quantitative, these results do not always match the assumed situation, so I have to always justify them and develop an action plan that is sometimes very demanding".	logistics manager/ medium-large logistics company/ TT

Source: own work.

At first glance, the explanation of this state would seem very simple. One of the main reasons why anyone starts doing business is autonomy. Simply put, man has everything under control – alone. Therefore, suddenly losing control and being exposed to it is an unpleasant feeling for every entrepreneur. Fortunately, we also have justifications that can provide us with deeper insight and, if necessary, to disprove prejudices (Tab. 3, rows 4-11). As we can see from these selected justifications, a common problem is that the control subject often creates negative attitudes in respondent's views. Another often-referred problem is the waste of time.

Figure 5. Changes in attitudes to control from the view of business size
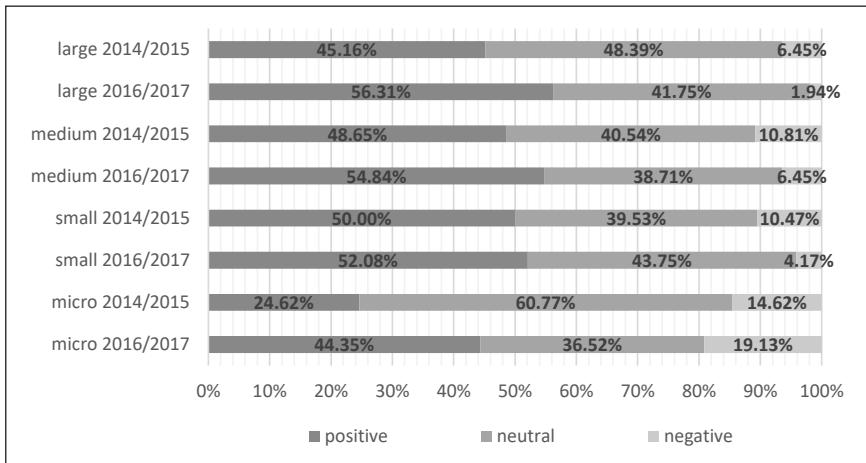
Source: own work.

As can be seen in Figure 5, there is a clearly shift toward positive attitudes in every single category. The most significant increases were in the category of microenterprises where the number of responses "positive" increased by almost 20 percentage points and in the large enterprises category, where they increased by more than 11 percentage points. The shift was also recorded in negative responses, but not just in the good direction. While other categories experienced a decline in negative attitudes, microenterprises had a poorer score of almost five percentage points than in 2014/2015. Except for the small business category, neutral attitudes have been reduced.

The second chosen characteristic is the level of management in which the respondent operates. In addition to top, middle and lower management, it also includes a category of informed employees. These include accountants, economists, control staff, etc. who have access to the valuable information needed for our research. The assumption should be that the most positive attitude to

control should have the top managers, as they have mostly gone through several positions, and should be managerially mature enough to look neutral to positive on control. In our case, however, there are several top-managers within the micro-businesses whereas their executives and owners have to be considered top-managers, since they only have the power to make strategic decisions. Seventeen of the twenty respondents with a negative attitude were such cases. Results according to the level of management are shown in Figure 6.

Other negative attitudes, which were measured in higher categories than microenterprises are listed in Table 3 (rows 12-14). As we can see on the justifications, negative answers are one more time associated with external control and time wasting. The Korean management justification, however, can be attributed to bad communication within the company.

Figure 6. Changes in attitudes to control from the view of level of management
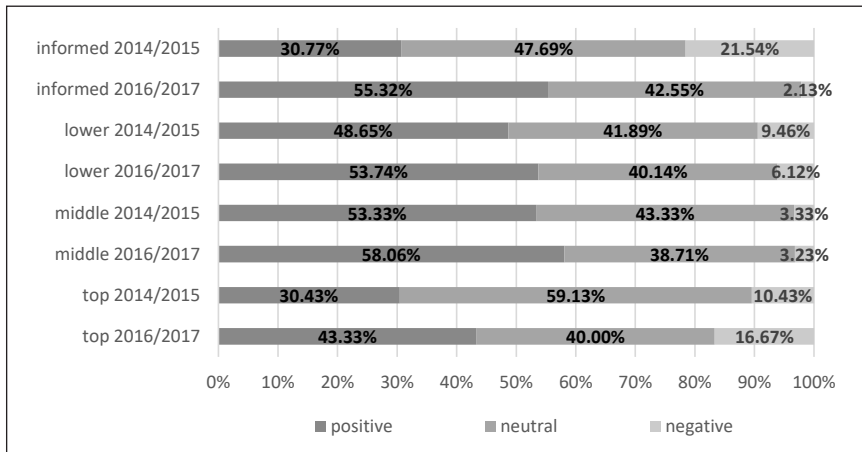
Source: own work.

Even in this case, we see clear shifts towards a positive attitude towards control. The highest rise in value was in the category informed employees, by more than 25 percentage points. These employees also had far less negative attitudes (21.5% vs. 2.1%). Significant changes, however, are seen in the case of top management and negative attitudes, which grew by more than 6 percentage points. Once again, this is the result of microenterprises.

As we have already mentioned, questions about control attitudes have been addressed also earlier in 2014 and 2015. We can therefore compare the views of both samples (Fig. 7).

Figure 7. Changes in attitudes to control in role of the object of control
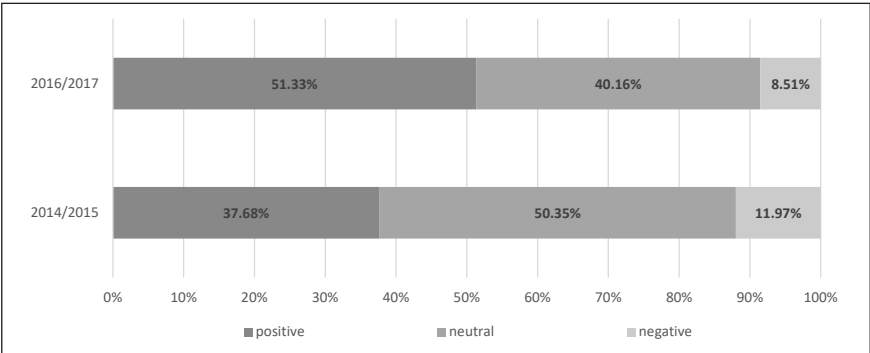
Source: own work.

By comparing both results, it is clear that negative attitudes to control have decreased. While the absolute figures are the almost the same (34/32), their share in the overall sample decreased significantly from 11.97% to 8.51%. A bigger representation of large companies in the 2016/2017 sample may play a role here. On the other hand, we see a significant increase in positive attitudes to control from 37.68% to 51.33% and a certain decrease in neutral attitudes from 50.35% to 40.16%. According to the given ratios, the order of the most frequently mentioned attitudes changed from neutral – positive – negative in 2014/2015 to positive – neutral – negative in 2016/2017.

5. Conclusion

As we point out in this paper, there are still many differences between the theory and practice of organizational control in the Western and Eastern countries. While self-control plays an important role in Western countries, formal control is essential in Eastern countries. While the Western approach expects man's motivation to achieve the best performance, many people in the eastern countries require the certainty of supervision to ensure that they do not make a mistake. In this regard, however, it is very important to point out that it is necessary not to take the eastern approach as something obsolete, overwhelmed, and totally wrong. It brings insight from other cultures, it has totality in its genes (expectation of discipline), but it can also be applied in Western countries in different situations. Crisis is one of such situations.

The preliminary results of our research show us that the attitude towards the management function of control in one of the countries of Eastern bloc really changes. In dozens of justifications from managers and informed employees, we see a growing understanding of the importance of control. We even see that they understand that control may them personally bring benefits in the form of reduction of errors, prevention of damage, learning from their own mistakes or new knowledge.

This progress, however, does not mean an ideal state. The problem continues to be external control by state organizations. In many cases, they were precisely named the reason for the respondent's negative attitude to control. Bureaucracy, demanding information they already have, or finding errors at any cost are the most common issues that respondents are stating in their justifications. Here the problem can be partially solved in the future by electronization of the state administration, thanks to the databases to which different control institutions will have access.

However, it will be important for institutions to be prepared to use this access and not to impose obligations on entrepreneurs. The staff of these institutions will be a key factor.

Another problem remains the micro-entrepreneurs. Again, we have noticed that some micro-entrepreneurs think they cannot be an object of control, as they do not have superiors. In some cases, we see a lack of knowledge about control. Although their positive attitudes have increased significantly, growth has also been seen in negative attitudes. Often, they are only objects of state control, but they cannot sufficiently utilize it. Even in the case of external control, there is an opportunity to learn important information that can greatly assist in doing business in the future. It is important to overcome themselves and not to be afraid to lose control for a short time.

We see a very positive development in the categories of informed employees due to a significant decline in negative attitudes. As one reason, we see the fall of the stress caused by the financial crisis. Employees in this category were not only very busy in the financial crisis but also scrutinizingly supervised by managers or external institutions.

In the future, we expect further reductions in negative attitudes to management control. It is the state administration, on which it will matter to what extent these attitudes will fall. We also assume that negative attitudes in micro-entrepreneurs will decrease by better education in the area of management and control.

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Chapter **5**

Restructuring and Effectiveness of the Production Mesostructure[1]

Piotr Bartkowiak, Jarosław Kaczmarek

1. Introduction

Corporate development, a complex and multi–dimensional process, is affected by business conditions and a number of factors as well as the processes that reflect economic principles and related economic benefits. These processes have an impact on corporate development and effectiveness. The value creation is the company's quantifiable measure of its growth, being a measurement criterion for assessing the effectiveness of the company as well as the entire economy.

The concept of restructuring in the context of its objectives and corporate development can be viewed as a process of reconstructing or changing structures – it implies structural changes in physical resources which increase the significance of all the components of the structure which represent modern solutions and which are usually more effective than previous solutions.

An assessment of restructuring activities can be viewed from the perspective of the scope, impact and character of the obtained effects. One of its dimensions is the verification of value creation in the company sector. The partial effects of restructuring have an impact on corporate value, being one of the universal methods for measuring corporate effectiveness.

The presentation of the obtained results of the research study focuses in the paper on the restructuring of the one of economy's structure, and its relations with effectiveness. The analysed structure is production mesostructure and its components are the sections of PKD (the Polish Classification of Economic Activities)[2]. Their effectiveness, viewed as an attribute of development and the corresponding restructuring processes, are quantified on the basis of multi–feature measure and sub–measures.

An assessment of the effects of the restructuring of production companies is based on the four leading areas of change: capital intensity of sales revenue, asset productivity, asset and capital structure, and renewal of fixed assets. The analysis of the scope of restructuring in a selected group

of production companies was conducting for long time series (1990-2014). The conducted ranging procedure is a basis for assessing the structural durability of the analysed group of companies as well as the classification of its meso-aggregates – the sections of PKD/Classification of Economic Activities. The measurements of increases in value creation for assessing the effectiveness of production mesostructure and its entities are based on relative measures (measures of return) – equity rate of return and value added ratio.

2. Development as the purpose of the enterprise

Describing the current economy can be indicates numerous of its attributes (turbulency, rate and radicalness of changes, internationalization, knowledge and information flows). They become the factors influencing the operating aims of enterprise. Beside the differences in their defining, survival and development should be considered as the most general (Marcinkowska, 2000, p. 18).

The development is identifying with the change of current state of things (Fabiańska & Rokita, 1986, p. 14). It is the dialectic process and changes which underlie, do not proceed by leaps and bounds but arrange in certain sequences and strings – constituting the process in which the individual parts join together in the more complicated systems, which have new attributes and regularities so far being unheard (Lange, 1968, p. 9). In systematic terms, the development of enterprise is connected with the increase of its complexity (Bojarska, 1972, p. 12).

The development of enterprise as the coordinated changes of its subsystems, adjust each other to constantly changing surrounding (Pierścionek, 1996, pp. 11-12). These changes can be quantitative or qualitative. The first ones refer to the differences in the size of one or a few parameters, and the second ones indicate the attributes, reactions or behaviours of enterprise (Stabryła, 1996, p. 9). Given the fact that these changes are ordered, relatively constant and follow each other, the development is the process proceeding in time. It consists of logically ordered phases and stages (Platonoff & Sysko-Romańczuk, 2003, p. 24).

Assigning the qualitative character to the development, and the quantitative to the increase, is in proper for the traditional attitude. Moreover, at the beginning, the development was associated with the size of enterprise, size of production or the factors of production. Only at the further stage the development was started to be seen as the qualitative changes, expressed by the changes of enterprise structures and its effectiveness (Kaczmarek, 2013, pp. 27-33).

3. Value and effectiveness – the purposes of operating and the measures of enterprise development

The effectiveness of enterprise functioning is conditioned by its development – it is its imperative. Maintaining the enterprise on the way of stable increase requires the constant verification of achieved effects. Their assessment is led with regard to their sources and streams of manufacturing factors engaged in order to achieve effects and expressed by measures of effectiveness. The effectiveness and development, though, result directly from the sources obtained by the enterprise (Polaczek, 2006, p. 235), and moreover – from their skilful usage, from changing the conditions into factors.

The term of effectiveness in managing is often connected, often to the contrary, with the term of rationality. Besides, the analyzes of those two categories forces out the necessity of acceptance of one more – prosperity. Formulating the generalized conclusion, the economic effectiveness can be considered as the most fully expressing the rationality of managing and prosperity is the efficient way of achieving the effectiveness (Młynarski & Kaczmarek, 2013, pp. 417-431). All of those categories are directed towards achieving the aims of enterprise functioning with its dominant purpose – its development.

The development associates with the qualitative changes is accompanied by the increase of quantity of sources and streams of manufacturing factors obtained by the enterprise. As the processes, the effective qualitative changes should cause the increase of value of enterprise, its creating (Pierścionek, 1996, p. 17). As it is proved, the value of enterprise and the development are the aims being tapered and complementary towards each other. The bilateral relationship occurs between them (interdependence).

Currently, as the pragmatic, quantifiable, financial purpose of enterprise is indicated the maximization of its value – the value of equity capital accumulated in it. The purpose is output on the grounds of managing the finances of enterprise, capital and financial benefits belonging to the owners of enterprise (Rappaport, 1996, p. 77; Stewart, 1994, pp. 72-73). The value referring to the benefits of owners is defined as the creative value (Cwynar & Cwynar, 2007, p. 35).

In understanding above, creating the value of enterprise can be considered as the universal and versatile measurement of effectiveness of operating the enterprise. It is, though, one of measures because the effectiveness should be seen in the broader context. The effectiveness constitutes the quantifying characteristic of enterprise development features. It results from the valuating character of its category in the assessment of assessment of dynamism, conditions, factors and processes which shape it (Chomątowski, 1993, pp. 37, 46, 83-88).

4. Restructuring and its objectives

The concept of restructuring in the context of its objectives and corporate expansion can be viewed as a process of reconstructing or changing structures – it implies structural changes in physical resources which increase the significance of all the components of the structure which represent modern solutions and which are usually more effective than previous solutions (Karpiński, 1986, p. 20). Thus the objective of restructuring is to increase the rationality and effectiveness of managing human resources and production factors and as well as to modernise an organization and increase its flexibility, innovativeness and adaptability (Borowiecki, 2002, p. 266).

The restructuring process as a corporate expansion method (apart from an expansion strategy based on the company's natural growth) (Stoner, Freeman & Gilbert, 1997, p. 266) aims to eliminate gaps between trends of changes in the business environment and company development policies and to keep pace with, or even be ahead of external changes, rectifying possible errors by introducing necessary changes. In connection with the above, the key objectives of restructuring include the following: creating foundations for corporate and product competitiveness, reaching sustained improvements in performance, increasing corporate value and, consequently, attracting prospective investors (Porter, 1985, pp. 50-62; Slatter, 1984, p. 89; Copeland, Koller & Murrin, 1997, p. 33).

The identification of primary goals and sub–goals and the effects of restructuring activities (financial, marketing and technological) can be accompanied by the identification of a number

of methods for measuring the effects of these activities. An assessment of restructuring activities can be viewed from the perspective of the scope, impact and character of the obtained effects. One of its dimensions is the verification of company value creation (Hurry, 1993, pp. 69-70; Copeland, Koller & Murrin, 1997, p. 304). The partial effects of restructuring, e.g. increased productivity, changes in the value of assets and capital and increased market competitiveness, have an impact on corporate value, being one of the universal methods for measuring corporate effectiveness.

5. The processes impacting the mesostructure's effectiveness

The presented understanding of the concept of economic development and effectiveness was a basis for research studies of these processes in the context of the Polish transformation, undertaken in 1990. The studies facilitate the identification and description of the scope of changes – transformation processes, their occurrence and impact on the effectiveness of Polish economic structures (Kaczmarek, 2012, pp. 103-114). The analysed structure is the production mesostructure and its components are the sections of PKD (the Polish Classification of Economic Activities). Their effectiveness, viewed as an attribute of development, and the corresponding processes are quantified on the basis of measures combined into structural and synthetic systems for achieving the primary goal and sub–goals of the study. The key processes which describe and influence effectiveness are the ones which contribute to achieving the sub-goals of transformation, including the following: structural changes, increased competitiveness, restructuring, improvements in financial security (financial condition) (Kaczmarek, 2012, pp. 103-109).

The further analysis in the paper focuses on the restructuring process, separated from the overall research and its occurrence and impact on the effectiveness of Polish economic production mesostructure.

The measurements of increases in value creation for assessing the effectiveness of production mesostructure and its entities are based on relative measures (measures of return) – equity rate of return and value added ratio. The synthetic (multi-feature)[3] measures of value are based on a micro- and macroeconomic approach (company value creation and the domestic product creation).

On the other hand, a synthetic measure of restructuring (along with its components) explains and quantifies four major processes in mesostructure entities: capital intensity of sales revenue, asset productivity, asset and capital structure, and renewal of fixed assets.

The construed measure makes it possible to analyse and assess the scope of restructuring changes in the production mesostructure and its components in 1990-2014. The ranging procedure[4] is a basis for assessing the position of entities in the production mesostructure ranging list. An analysis of average ranging positions and their changeability leads to the classification of production mesostructure components (Kaczmarek, 2012, pp. 191-209).

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[3]   Synthetic measures for the needs of the analysis are multi–feature measures – they describe the structural character of economic relations and mesostructure entities from the point of view of particular features.

[4]   The lowest ranging values are assigned to the highest value of analysed measures with the use of the average ranging method.

6. An assessment of the processes of restructuring

6.1. Labour costs and material costs

In 1990 and 2014, the Polish economic mesostructure does not record considerable differences in the position of its entities in the coordinate system described by means of labour cost values and material costs[5]. The mesostructure's entities and central point[6], however, are positioned closer to the starting point of the coordinate system, which is a positive phenomenon (both factors are distimulants). An increase in the density of mesostructure entities is recorded in 1992-1996 and 2007-2008.

The 1990–1995 period is characterised by a rapid decline, followed by an increase in material costs with lower dynamics of changes to labour costs ratios (both measures show the same trend). Following this period, the amplitude of changes is considerably lower, reflecting a decrease in labour costs values with slight changes in material costs values. The year 2004 marks the beginning of the period of stability, which is slightly distorted in 2009.

The shape of the curves representing labour costs ratios, material costs and total costs (considering the knowledge of their structure by type) indicates a decrease in labour costs in 2004 (at a relatively stable level of material costs) mainly as a result of spanning structures and outsourcing.

Figure 1. Labour, material and total costs ratios of production mesostructure in 1990-2014
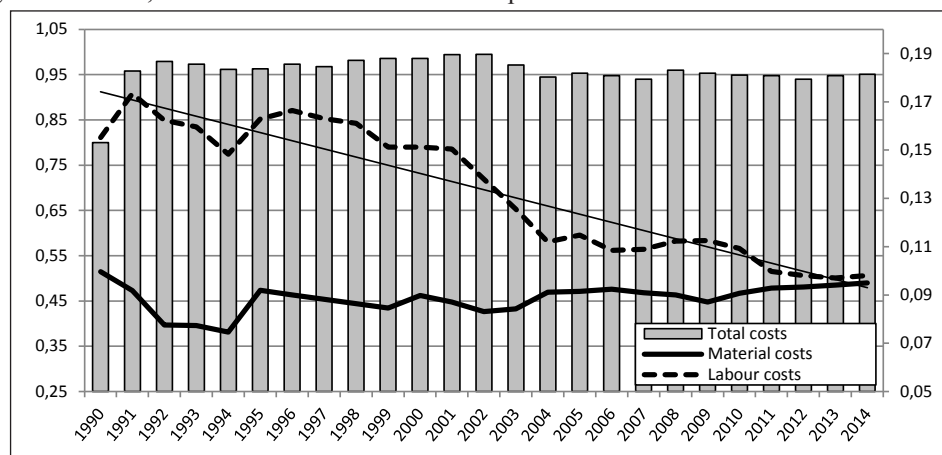
Notes: unitless values (nm). Labour costs – right axis.

Source: own elaboration.

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[5]   The capital intensity of sales revenues includes two cost components: labour costs ratio and material costs ratio (materials, energy, depreciation).

[6]   The mesostructure's central point is not expressed by mean results but by the mutual referring of factor – related values (so called super object).

6.2. Asset productivity

The 1990-1996 period records an increase in the productivity of mesostructure assets, while the next period is characterised by slight declines at the end of the period of economic slowdown (2001-2002, and 2009). In the analysis of the productivity of total assets, fixed and current asset factors are differentiated – the reversed sum of their capital intensity equals the productivity of total assets. In 2014, the mesostructure records considerable density (smaller differences in terms of capital intensity measures) as compared with 1990, while the central point, being closer to the starting point of the coordinate system, (positive assessment – both factors are distimulants) indicates that the lowering of revenues is affected by fixed assets rather than current assets.

Reduced capital intensity is characterised by high dynamics only until 1995. The subsequent years recorded a slight increase in the impact of fixed assets on sales revenues in the period of economic recovery, while the impact of current assets was relatively stable. It implies that the productivity of current assets did not increase despite economic expectations.

Figure 2. Production mesostructure productivity of total assets and its components in 1990-2014
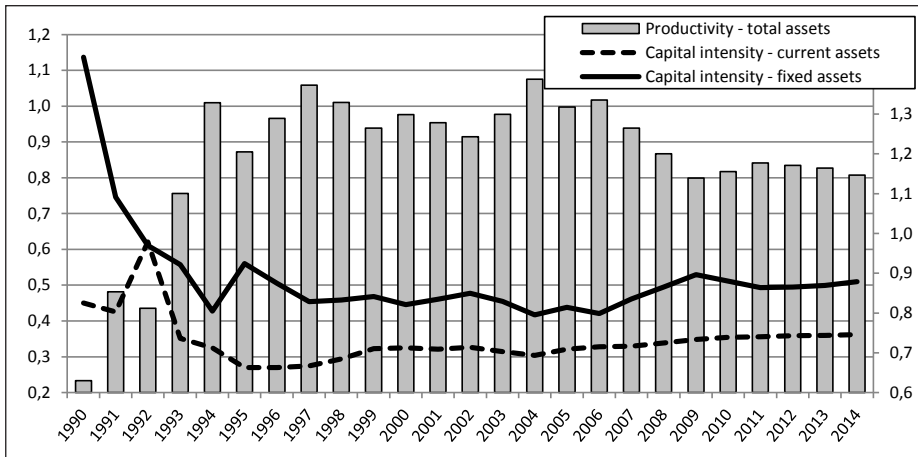
Notes: unitless values (nm). Productivity of total assets – right axis.

Source: own elaboration.

6.3. The capital and asset structure

In terms of the values of partial ratios – asset structure and capital structure[7] – the production mesostructure records considerable differences in 1990 and 2011. At the beginning of the transformation process entities are dispersed and most of them are placed above the diagonal of the coordinate system (the advantage of the capital structure factor). In a later period the central point and mesostructure entities move towards the axis of the asset structure ratio, and most of them are placed below the diagonal of the system. Also, the entities around the central point become much denser – PKD sections record similar values of the two analysed partial ratios.

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[7]   The first one describes fixed to current ratio values, the second one – equity to external capital.

The movements of the central point represent changes in the mesostructure – the initial period is characterised by a considerable weakening of the capital structure (1990-1992); until 1995 the values of asset structure and capital structure ratios rise (the period of economic growth, a positive assessment)[8] to fall again in the next period. As of 2001, (the beginning of another period of growth) changes have a different character – the capital structure, unlike the asset structure, becomes stronger.

The further analysis describes changes in the curves representing the values of asset structure and capital structure ratios. A considerable increase in the capital structure ratio as of 2003, accompanied by a decreasing value of the asset structure ratio results in an increase in the combined asset-capital structure ratio. In the subsequent years the values of both partial ratios has stabilized.

Figure 3. Asset-capital structure ratio and its components of production mesostructure in 1990-2014
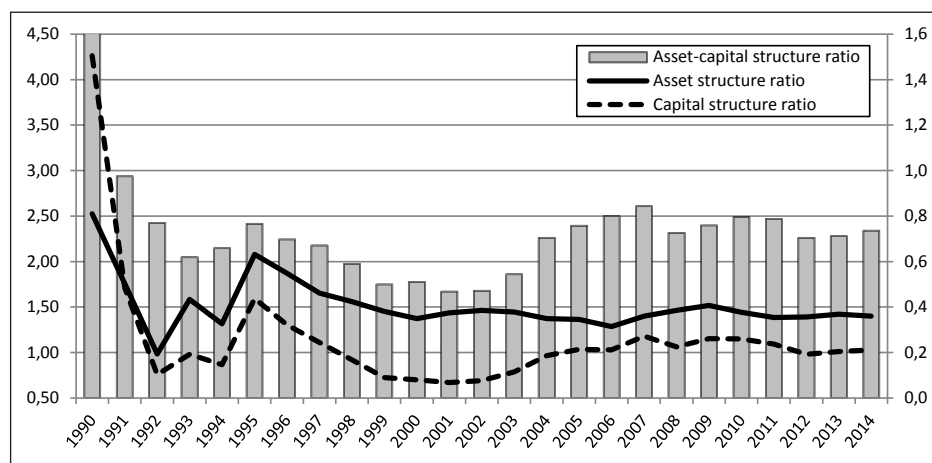
Notes: unitless values (nm). Asset-capital structure ratio – right axis.

Source: own elaboration.

6.4. Fixed asset recovery

The fixed asset recovery process[9] in the economy's mesostructure was characterised by different levels of intensity in 1990-2014, which corresponded to changing business cycles. Attention should be given to low levels of fixed asset recovery ratios in 2001-2005 – lower than in the initial period of the systemic transformation (transformation recession). This period was followed by slight increases (2005-2008) and in later periods the ratios declined again.

The determination of fixed asset outlay and wear and tear ratios indicates the dynamics of changes in the course of time. The impact of outlays largely depends on the time factor (corresponding to business cycles), while wear and tear values tend to be stable.

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[8] The value of the asset–capital structure ratio is positively assessed when it rises. The minimal level (reference point) is the value at the level of one – the golden rule of balance sheet.

[9] It is expressed by investment outlays to fixed asset depreciation relations (in tangible assets).

Changes in the mesostructure also result from the dispersion of its entities recorded in 1990-2011 – PKD sections are considerably different in terms of wear and tear ratios. The central point, apart from its "loop" shape in 1994-2004, is at the most distant location from the starting point of the coordinate system in 2014 (an almost proportional increase in both partial ratios). The majority of PKD sections demonstrate high changeability and low ranging position levels.

Figure 4. Fixed asset recovery ratio and its components of production mesostructure in 1990-2014
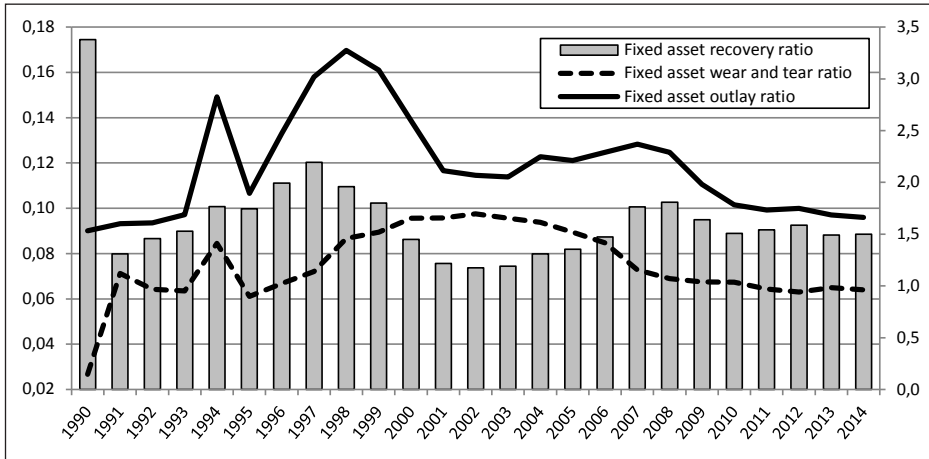
Notes: unitless values (nm). Fixed asset recovery ratio – right axis.

Source: own elaboration.

7. The scope of restructuring changes in mesostructure entities

The use of a synthetic (multi-feature) restructuring measure (MR) (Kaczmarek, 2012, pp. 114-126) – based on the following values: capital intensity of sales revenues, asset productivity/efficiency of business operations, asset and capital structure, and fixed asset recovery – leads to the general conclusions concerning production mesostructure changes.

Apart from the changes in ranging positions, especially at the end of the list, the assessment of the production mesostructure in terms of the scope of restructuring changes, is not satisfactory. Leadership positions are occupied by the PKD sections representing traditional core activities and their position is relatively stable.

The major changes refer to the ranging positions placed between the initial and central as well as between the final and central ranging positions. It is confirmed by a comparative analysis of the average ranging position and standard deviation values. The fourth and largest group includes PKD sections which have a low ranging position and high changeability of mesostructure entities.

The initial period is characterised by a rapid downturn in 1993-1994 (preceded by a "waiting" period), followed by a period of recovery in the period of the two subsequent years. It can be treated as a turning point – an impulse for major restructuring efforts. The changes of this period are unique in character – in the subsequent years, apart from the economic recovery in 2002-2007,

restructuring measures never reach such high levels. It was the effect of specific changes in the main restructuring areas, described on the basis of partial measures. Special attention should be given to the following issues:

- slight changes were recorded for material costs – visible stabilisation assessed on the basis of their share in sales revenues. After 2004, labour costs values stopped decreasing;
- living labour was not visibly replaced by objectified labour (as an indication of technological advancement);
- until 2004 – a considerable increase in the costs of outsourcing and, consequently, closer co-operation between mesostructure entities;
- lack of significant changes in total asset productivity – capital flows were not accelerated (asset management efficiency);
- the values of the asset-capital structure ratio – apart from their increase as of 2002 – were not greater than one;
- the asset recovery process recorded low increases in 2004-2008 (a period of economic upturn), considerably lower than in the previous period (1993-1997).

8. The impact of restructuring on the production mesostructure's effectiveness and classification of its entities

The dynamics of changes in restructuring ratios (as compared with the initial year) and changes in the production mesostructure's effectiveness do not confirm their direct co–existence. It is confirmed by a low value of Spearman's rank correlation coefficient (0.41). Nevertheless, a detailed analysis indicates a delay in the effects of restructuring efforts (as a result of their character and content as well as the specific measures). The shift of the curve of the restructuring ratio by two years (towards the starting point of the coordinate system) implies that it gets closer to the changes in effectiveness measures. Hence the conclusion of the occurrence of a two-year delay, at the mesostructure level, of the impact of restructuring changes on the mesostructure's effectiveness. The calculated correlation measure amounts to 0.71 ($p < 0.05$). Therefore, it can be assumed that there is a strong and statistically significant correlation (co-existence).

The analysis of restructuring and the effectiveness of production mesostructure entities and the results of the comparison of the position of entities in 2014 and the initial period of the systemic transformation (1990) show differences in their density. In 2014, PKD sections are more similar in terms of the values of the analysed synthetic measures. The further analysis and the perpendicular lines connecting the coefficients of the central point determined by the two-dimensional median lead to the classification of mesostructure entities into four groups (see Tab. 1).

Regrettably, group 4 includes the largest number of entities in terms of effectiveness and restructuring measures – over 40%. Group 2 and 3 (each one) – 18% of PKD sections, and group 1 – 24%. The leading positions are occupied by mining industries (petroleum and earth gas) and metal ore mining.

Table 1. Production mesostructure entities with the lowest and highest effectiveness and restructuring measures in 2014

High effectiveness – high restructuring level (1)	High effectiveness – low restructuring level (2)
07. Mining of metal ores	33. Repair, maintenance and installation of machinery and equipment
06. Oil and earth gas mining	23. Manufacture of other non–metallic mineral products
12. Manufacture of tobacco products	27. Production of electrical appliances
11. Production of beverages	38. Waste collection, treatment and disposal activities
14. Manufacture of clothing	25. Manufacture of fabricated metal products, except machinery and equipment
High restructuring level – low effectiveness (3)	**Low restructuring level – low effectiveness (4)**
16. Manufacture of wood and cork products, except furniture	22. Manufacture of rubber and plastic products
13. Production of textiles	29. Production of vehicles and trailers, excluding motorcycles
10. Manufacture of food products	20. Production of chemicals and chemical products
15. Manufacture of leather and articles of leather	35. Production and supply of energy, gas, steam, hot water and air
17. Manufacture of paper and paper products	26. Manufacture of computers, electronic and optical products

Source: own elaboration based on comparative analyses (Kaczmarek, 2012, p. 249).

9. Conclusion

The analysis in the paper was focused on the restructuring process, separated from the overall research and its occurrence and impact on the effectiveness of Polish economic production mesostructure.

An assessment of the effects of the restructuring of production companies is based on the four leading areas of change (capital intensity of sales revenue, asset productivity, asset and capital structure, and renewal of fixed assets). The measurements of increases in effectiveness for assessing the effectiveness of the production mesostructure and its entities are based on relative measures (measures of return) – equity rate of return and value added ratio.

The assessment of the production mesostructure in terms of the scope of restructuring changes, is not satisfactory. Leadership positions are occupied by the PKD sections representing traditional core activities and their position is relatively stable. Special attention should be given to the following issues:

- living labour was not visibly replaced by objectified labour (as an indication of technological advancement),

- a considerable increase in the costs of outsourcing (closer cooperation),
- lack of significant changes in total asset productivity,
- the asset recovery process recorded low increases.

The dynamics of changes in restructuring ratios (as compared with the initial year) and changes in the production mesostructure's effectiveness do not confirm their direct co–existence. Nevertheless, a detailed analysis indicates a two-year delay of the impact of restructuring changes on the mesostructure's effectiveness (at the medium level).

On the basis of synthetic measures (as pairs – restructuring and effectiveness) it is possible to analyse and assess the density of entities, the location of the central point and its trajectory, the ranging positions of entities and their changeability as well as the classification and subordination of entities. Such activities carried out on a regular basis (monitoring) can contribute to creating information resources which are applied in the process of making economic decisions.

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Chapter 6

Growth of Productivity as a Measurable Effect of Synergy Between Labour and Tangible Assets

Anna Jonkisz-Zacny

1. Methodology and purpose of the study

The methodology of the research presented in this paper is primarily deductive. The economic activity function is attained by way of deduction, whereas the use of differential calculus leads to estimating the influence of assets and other values on labour productivity. It is known, however, that legitimate theory needs to be confirmed by empirical studies carried out in accordance with the induction method, and hence the verification of hypotheses about a material impact of tangible assets on labour productivity requires confirmation in statistical surveys. In this regard, I take reference to the main results of research presented by E. Soszyńska (2008).

The author claims that "... empirical research in the process of introduction of individual symptomatic variables to regression models implies that in general terms, in most countries the investment in physical capital remain the basic driver of growth.." (Soszyńska, 2008, p. 158). E. Soszyńska also emphasises that economic growth is to a large extent contingent on the rate of investment in physical capital, that is to say in in physical assets in the system of adopted basic concepts. This point is proven by wide and direct observations (impact of tools, machinery and equipment on the amplification of human labour effects). These are simply the visible signs of technical progress. The introduction of computers and information networks makes a perfect illustration of this phenomenon. It is with their help that production machines are controlled, as well as other equipment applied in virtually all economic and social areas. The computer constitutes one of the most spectacular examples of improving the efficiency of human labour by saturating it with fixed assets.

The chief aim of the study is to identify the significance of the adequate composition of tangible assets and living labour in the context of growth in labour productivity and efficiency of actions. While considering economic growth and the associated production function, the economists take recourse to the category of "physical capital". This leads to confusion, as they fail to view the capital as an abstract category which is complementary to the category of labour. The system of scientific categories implemented in this article derives from the theory of capital as abstract capability of performing labour (Dobija, 2014, 2016a).

Accordingly, the methodology of this study implements a clearly defined system of concepts cited throughout this paper, defining: capital, labour, value, assets and other concepts. Against this background, the function of economic activity (FAE) is introduced, as a tool to study the causal relationship between labour productivity and the explanatory variables, by way of illustration human capital, assets and other data. Thanks to the introduction of FAE, the manufacturing processes may be described through the multivariable analytic function (Dobija, 2013; Jędrzejczyk & Dobija, 2013; Kozioł, 2011), this facilitating causal examination using differential calculus, following the example of profitability analysis (Dobija, 2011, pp. 278-280).

2. Categories of capital and assets as data points (independent variables) of economic activity function

Adequate definition of the capital categories is the principal problem that arises while measuring economic efficiency. There has occurred a lot of discrepancy against this background for a long time. B. Kurek (2011, p. 17) mentions the two concepts of the capital: physical and economic "Economists view the capital both as a set of heterogeneous resources used for the production of goods and as a homogeneous fund of value which flows between the alternative possibilities of utilisation of production factors with a view to attaining a fair rate of return".

In other words, with a view to examining the problem of value and productivity of fixed assets one should fit a system of concepts into a system, whereas a lot of those concepts are not coherent at the level of accounting theory and economics. As already mentioned, the system of concepts applied in this paper has been derived in terms of theory by M. Dobija (2016b). It is a set of 8 categories:

- Capital – is an abstract category and expresses a potential ability of a specific good – be it an asset or person – to perform labour. In addition, capital is abstract, uncountable, yet measurable (Dobija, 2010, p. 48).
- Labour – it is the transfer of capital, and thus the potential ability to perform labour, inherent in material or personnel resources. In the course of labour, this capacity is directed to the targets, that is to say to the objects of the activity. The labour rendered by a teacher, police officer is a transfer of their capital – potential ability to the objects of labour, in other words to the transfer of knowledge, caring about security. Operation of the equipment, a car constitutes the transfer of physical material capital – the transfer of the potential capacity of tangible assets to the object of work. Whereas the machine can produce specific goods, the car can transport people or goods. Labour is known to be a category measurable in labour units. Labour unit = power unit × number of time units (Kurek & Dobija, 2013).
- Value – is a measure of capital contained in the object. By way of illustration, both a scythe and mechanical mower are assets endowed with the same labour capacity – both of them have been designed for mowing grass. Nonetheless, it is the mower that works faster, more efficiently and accurately, due to the higher concentration of capital contained therein, while also presenting a higher value. Likewise, the differences occur in the value of rendered labour between the production line employee, on the one hand, and the designer of the line, on the other. Hourly rates for labour rendered by these persons are by all means different.
- Money – constitutes receivables due for labour, expressed in monetary units. The economic and legal category specifying the unconditional right to receive the equivalent. The value of re-

ceivables due for an employee is determined as the hourly rate times the number of working hours.

- Monetary unit – determines a fraction of a labour unit applied in economy, holds a legally protected name (1 Polish zloty in Poland).
- Assets – tangible and intangible objects which feature the concentration of capital or value, measurable in monetary units.
- Economic constant – number specifying the average growth rate of capital in management ($p = 0.08$ [1/year]). It quantifies, by way of illustration, the impact of the forces of Nature on the economic growth (Dobija, 2010; Kurek, 2011).
- Resources – economic factors of indeterminate capital content, thus immeasurable. Resources are solely quantifiable in natural units.

The presented arrangement of concepts shows considerable differences vis-à-vis the one commonly applied. In the bibliography, references can be found to viewing capital as a material category, while labour remains an undefined category for this study, where the deductive method is applied, a strict definition of terms is required. Due to unclear perception of capital, neither the category of value, nor that of money are clearly defined, this resulting in incessant controversy.

The business pursued by economic entities is of economic nature, aimed at multiplying the initial capital, which is measured by means of adequate theoretical tools. Accounting and its theory deals with the measurement of economic data, profit in particular. The first records of the accounting systems date back to ancient Mesopotamia, and in the fifteenth century, L. Pacioli describes the principles of double-entry records, which accomplishes profit measurement. Accordingly, at the current juncture, the measurement of economic effects of economic operators takes place thanks to the role of dual accounting, which facilitates capturing a gain in abstract capital included in assets.

The principle of duality and its theoretical foundation is developed by Y. Ijiri (1993) who mentions that duality should occur in each journal entry. Each transaction carries a double effect. Causality exists between the data, which correspond to one another. Furthermore, quoting after Y. Ijiri, not all opportunities arising from the phenomenon of double entry have already been discovered. The researcher takes note of the uniqueness of the category of capital. He examines the capital, as the inertial mass which remains constant until some causal economic force works – which may affect the invested capital (own assets) in a positive or destructive manner.

The financial statements, called the balance sheet, presents the capital located in manifold types of assets and liabilities, this facilitating the assessment of the economic value of the relevant business unit. Consequently, understanding the balance sheet report and the abstract nature of capital paves the way for new cognitive perspectives. The capital then emerges as a category of intangible asset with no physical form and an abstract concept that denotes the potential ability to perform labour. By way of illustration, a car as an item of economic resources is recognised in accountancy both as a value of heterogeneous asset and as abstract value of capital, that is to say its transportability, in this case.

The manufacturing process is accomplished with the sale of the product, or in other words, market exchange of the product for money. This process can be described by way of a multivariable function consistent with the principles of cost accounting, while maintaining separation between capital and assets.

Money-goods economy assumes exchange of products for money. Product value in the accounting system is determined by the cost account, having regard to the relevant variables of the manufacturing processes. Cost value is subject to market verification where the exchange value is finally

determined. In view of the above, a multivariable function can be formulated which takes into account the arguments distinguishing the manufacturing process and the market exchange process. Respectively, I take recourse to FAE for the capital movement examination in the economic processes in a similar manner to analytic production functions known from the works by such authors as: (Dobija, 2013; Barburski & Dobija, 2011).

We know that any business must involve incurring certain expenditures – K costs which represent both technical and organisational costs. These are the component of the selling price of P products which also includes profit, that is to say surplus revenue from the sale of N in excess of the value of K costs incurred, and accordingly N = P – K. The determination of the average rate of r costs profitability produces r = N / K = P / K – 1. Then, the economic activity function takes the simplest form:

$$P = K(1 + r) \tag{1}$$

where:
P – annual production at the selling price,
K – production costs,
r – average annual rate of cost profitability.

The incurred K costs can be divided into two parts: W – labour costs and B – other business-related costs: the cost of materials, depreciation, external services. These costs pertain to the relevant reference period, and so they can be applied to the value of A assets. Referring them to the A assets determines the turnover rate. Equation (1) takes the form:

$$P = (W + B)(1 + r) = W(1 + \frac{B}{W})(1 + r) \tag{2}$$

where:
W – labour costs,
B – other costs determined by technology and management process.

Then, N/K determines cost profitability and is a function of two variables: ROA assets profitability = N/A (that is to say, N = ROA · A) and the figure determining the turnover of A assets vis-à-vis K cost. Hence, w = K/A, in other words K = w A. Thus:

$$r = \frac{N}{K} = \frac{ROA \cdot A}{w \cdot A} = \frac{ROA}{w} \tag{3}$$

where:
A – average value of assets at historical, balance sheet prices,
w – assets to cost turnover.

It follows that the cost profitability ratio is a function of the return on assets.

As stated earlier, m turnover to assets ratio can be applied for the value of non-wage B costs; this is the B cost to A assets ratio. It is worthwhile to emphasise that both of those values are avail-

able from financial reporting. Accordingly, m = B/A, that is to say B = mA. In contrast, W labour costs, according to the human capital theory (Dobija et al., 2000), are a derivative of human capital and are the product of the rate of payment for u human capital and the total value of the H human capital employed.

$$W = u \cdot H \tag{4}$$

where:
u – rate of human capital payment,
H – total value of the human capital of the employed.

Following the insertion of turnover ratios and transformations, the FAE form is attained, equal to P production:

$$P = W(1 + \frac{m \cdot A}{u \cdot H})(1 + r) = W(1 + \frac{m}{u} \cdot \frac{A}{H})(1 + r) \tag{5}$$

where:
m = B/A represents the trade turnover of assets to other non-wage costs.

It can be then observed that the A/H ratio denotes the technical equipment of labour, this including the assets held: materials, machines and cash. It is a generalisation of the known capital-labour ratio.

The comparison of FAE with the econometric model of the production function shows that it is more complex, it contains a number of relevant variables; W wages, w and m turnover ratios, return on assets (ROA) and the u degree of payment of wages. In contrast to the econometric production function, FAE composes non-linearly the values in money terms, in accordance with the accounting system, that is to say, a system to measure gains. The transformation of the equation yields the formula (6):

$$P = W(1 + \frac{m}{u} \cdot \frac{A}{H})(1 + \frac{ROA}{w}) \tag{6}$$

As can be seen, P is a function of labour costs, and a numerical value that specifies the effective value of labour productivity.

The FAE function can be presented more synthetically with the MEA model of economic activity. The summation in terms of expressions with the number 1 is close to zero, and accordingly, taking recourse to property +a ≈ e^a gives the model of the economic activity function.

$$MEA = P = W \cdot e^{\frac{mA}{uH}} \cdot e^{\frac{ROA}{w}} \tag{7}$$

Determination of expression standing next to W labour costs as Q leads to the dependence P = W · Q, where Q is a numerical ratio of labour productivity. As can be seen, Q is a function of 6. relevant variables. If variables marked with a lowercase letter and ROA are replaced by a synthetic F variable, the W, A, H variables will remain in the MEA. The MEA model takes then the following form:

$$P = We^{\frac{AF}{H}} \tag{8}$$

where:

F – management variable synthesises the impact of short-term values: m, w, u, ROA.

By taking recourse to the human capital theory, it is known that the fixed wage should not to be less than 8% of the value of the employee human capital. This is determined by the constant of potential growth p = 0.08 (1/year) (Dobija, 2000; Jędrzejczyk & Dobija, 2013; Kozioł, 2009). Respectively, the total value of the H human capital employed is expressed by the ratio of L basic wage (data may be acquired from the accounting records) to a p constant of potential growth, as expressed by the formula H = L/p, i.e., L = pH. Respectively, the MAE model takes the following form:

$$P = We^{\frac{AFp}{L}} \tag{9}$$

The labour productivity ratio tends to occur essentially in the formula P = W · Q. As a non-denominated number, it constitutes a multiplier of labour costs that determines the volume of output sold. On the other hand, Q determines the value of output per one zloty of labour costs, this being defined by the following formula $Q = e^{\frac{AFp}{L}}$.

The MAE in this form facilitates carrying out causal research. This research can help determine the impact on Q labour productivity exerted by particular variables: the level of A asset value, the level of F management variable and L fixed wages, as well as W labour costs.

The quantitative approach of the manufacturing process, developed by the above-cited authors, is employed in the description of the micro- and macroeconomic phenomena. In particular, both the FAE and MEA helped solve the problem of determining the premium remuneration in compliance with the company performance. This issue has been mainly examined by W. Kozioł (2011, 2009) who defined the relationship between L fixed wages and the total sum of wages. The research has shown that the L premium remuneration stands at 20% of fixed wages. The approximate relationship W = 1.2 L occurs in the value of labour costs. In addition, M. Dobija (2016a, 2016b) shows the role of Q labour productivity in pivotal macroeconomic issues, such as: determination of an acceptable level of wages, the value of the public sector and the optimal level of loan.

3. Estimating the impact of growth in tangible asset value on labour productivity

Estimating the impact of growth in tangible asset value on labour productivity can be actualised by way of empirical research, which will verify the hypothesis put forward in the paper. The FAE function facilitates the application of differential analysis to examine periodic increments, and thus offers the estimation of impact of individual variables on labour productivity. The research has been conducted on the data from the financial statements of the three economic entities: KRUK Group, VISTULA GROUP SA, KĘTY Group SA for 2013 and 2014. The examined entities represent three different industries: financial, textile and metallurgical. The acquired data is presented in Table 1

which also includes the determination of the Q labour productivity ratio and its growth at the end of the period under examination.

Table 1. Statements of financial data of the examined entities (in PLN thousand)

		Grupa Kapitałowa KRUK	VISTULA GROUP SA	Grupa KĘTY SA
Value of tangible assets (A)	2013	20 079	49 468	312 115
	2014	20 265	52 038	310 318
	Δ	**186**	**2 570**	**- 1 798**
Output sold (P)	2013	405 611	397 677	605 848
	2014	487 920	443 388	706 838
	Δ	**82 309**	**45 711**	**100 990**
Wages (L)	2013	116 452	79 475	73 838
	2014	137 246	82 815	81 540
	Δ	**20 794**	**3 340**	**7 702**
Labour productivity (Q = P / L)	2013	3,4831	5,0038	8,2051
	2014	3,5551	5,3540	8,6686
	Δ	**0,0720**	**0,3502**	**0,4635**
Management variable (F)	F_0	90,4696	32,3368	6,2241
	F1	107,3776	32,1568	7,0936
	Δ	**16 908**	**- 0,1800**	**-0,8695**

Source: own calculations based on the financial statements taken from the websites of companies: KRUK Group, VISTULA GROUP SA Group KĘTY downloaded on 22 August 2016.

The impact of ΔA growth in tangible assets on a change in Q labour productivity is determined by the following differential:

$$\frac{\partial Q}{\partial A}(A_1 - A_0) = e^{\frac{A_0 \cdot F_0 \cdot p}{L_0}} \cdot \frac{F_{0P}}{L_0} \cdot (A_1 - A_0) \tag{10}$$

In order to determine the value of the F management variable the equation $Q = e^{\frac{AFp}{L}}$ is transformed and the following numerical results are received:

$$F_0 = F_{2013} = \frac{L_{2013} \cdot \ln Q_{2013}}{A_{2013} \cdot p} \tag{11}$$

$$F_1 = F_{2014} = \frac{L_{2014} \cdot \ln Q_{2014}}{A_{2014} \cdot p} \tag{12}$$

Table 1 presents the results of the calculated F variables for the respective periods and the increase in individual companies. Next, follows the determination of the effect of particular variables on labour productivity.

The impact of A tangible assets variable on Q labour productivity:

Grupa Kapitałowa KRUK

$$\frac{\partial Q}{\partial A}(A_{2014} - A_{2013}) = e^{\frac{A_{2013} \cdot F_{2013} \cdot p}{L_{2013}}} \cdot \frac{F_{2013} \cdot p}{L_{2013}} \cdot (A_{2014} - A_{2013}) = 0.0403$$

VISTULA GROUP SA

$$\frac{\partial Q}{\partial A}(A_{2014} - A_{2013}) = e^{\frac{A_{2013} \cdot F_{2013} \cdot p}{L_{2013}}} \cdot \frac{F_{2013} \cdot p}{L_{2013}} \cdot (A_{2014} - A_{2013}) = 0.4186$$

Grupa KĘTY SA

$$\frac{\partial Q}{\partial A}(A_{2014} - A_{2013}) = e^{\frac{A_{2013} \cdot F_{2013} \cdot p}{L_{2013}}} \cdot \frac{F_{2013} \cdot p}{L_{2013}} \cdot (A_{2014} - A_{2013}) = -0.0994$$

The impact of F management variable on Q labour productivity:

Grupa Kapitałowa KRUK

$$\frac{\partial Q}{\partial F}(F_{2014} - F_{2013}) = e^{\frac{A_{2013} \cdot F_{2013} \cdot p}{L_{2013}}} \cdot \frac{A_{2013} \cdot p}{L_{2013}} \cdot (F_{2014} - F_{2013}) = 0.8124$$

VISTULA GROUP SA

$$\frac{\partial Q}{\partial F}(F_{2014} - F_{2013}) = e^{\frac{A_{2013} \cdot F_{2013} \cdot p}{L_{2013}}} \cdot \frac{A_{2013} \cdot p}{L_{2013}} \cdot (F_{2014} - F_{2013}) = -0.0448$$

Grupa KĘTY SA

$$\frac{\partial Q}{\partial F}(F_{2014} - F_{2013}) = e^{\frac{A_{2013} \cdot F_{2013} \cdot p}{L_{2013}}} \cdot \frac{A_{2013} \cdot p}{L_{2013}} \cdot (F_{2014} - F_{2013}) = 2.4126$$

The impact of L remuneration variable on Q labour productivity:

Grupa Kapitałowa KRUK

$$\frac{\partial Q}{\partial L}(L_{2014} - L_{2013}) = e^{\frac{A_{2013} \cdot F_{2013} \cdot p}{L_{2013}}} \cdot [-AFp \cdot \frac{1}{L^2}] = -0.000037$$

VISTULA GROUP SA

$$\frac{\partial Q}{\partial L}(L_{2014} - L_{2013}) = e^{\frac{A_{2013} \cdot F_{2013} \cdot p}{L_{2013}}} \cdot [-AFp \cdot \frac{1}{L^2}] = -0.000101$$

Grupa KĘTY SA

$$\frac{\partial Q}{\partial L}(L_{2014} - L_{2013}) = e^{\frac{A_{2013} \cdot F_{2013} \cdot p}{L_{2013}}} \cdot [-AFp \cdot \frac{1}{L^2}] = -0.000233$$

4. Conclusions from the examinations and causal research

The computations provide grounds for conclusions to be drawn. The tangible assets growth in the KRUK Group entity has a positive effect on the growth in labour productivity. This is also confirmed by the management variable. The level of wages can be considered appropriate. As regards VISTULA GROUP SA, the increase in tangible assets also has a positive effect on the growth in labour productivity, and more importantly, the management level features a considerable growth (F variable represents the organisation and management). Amidst these values, the wages proved to be slightly too elevated. In the KĘTY SA Group, a slight decline in tangible assets had no effect on labour productivity which followed an upward trend, this coincided with a marked increase in the management variable, the other ratio affecting labour productivity. This robust performance is adjusted by excessive wage growth.

Research into labour productivity forms part of the overall research into the value of output sold via the function of FAE = WQ, as presented in the article by A. Jonkisz-Zacny (2016). The combination of this research gives an overview of the impact of the considered variables on the manufacturing process.

The computation of variables on labour productivity was only limited to the first partial derivative. The aggregated impacts determined by the mixed derivatives were omitted as less significant. The results are consistent with the research carried out by using econometric models. They point to a significant impact of investment in physical capital, that is to say in assets (Soszyńska, 2008) which translates into increased labour productivity and positive results of the manufacturing process. The F management variable, which represents the TFP Total Factor Productivity category in this type of research, is inherent in this variable. The F management variable represents the degree of payment of wages, turnover and return on assets.

The results of the research confirm the fact that investing in "physical capital" – assets, directly translates into increase in labour productivity. This also has a beneficial impact on the result of manufacturing processes.

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Chapter *7*

A Spatio-temporal Approach to Intersectoral Labour and Wage Mobility

Karol Flisikowski

1. Introduction

Mobility of wages and employment is an issue widely understood and analyzed. In this study, mobility is considered as a change in the structure of sectoral wages and labor force over time. This specific type of structural mobility can be characterized by a number of analysis used in the indicators. Its choice influences their interpretation and economic sense. It can also be associated with various factors of its economic environment. These include, among others: human capital specific to the sector (often identified with the sectoral wages), unemployment, institutionalism, wage or income inequality. Several studies confirms the existence of clear links between labor force and wage mobility (not only at the sectoral level) and factors mentioned above, which the author believes are the main reasons to believe that indirectly both of them can be related with each other. The main objective of this paper is an attempt to aggregate and synthesizing of both mobility relationship in the form of one spatial regression model. The selection of a spatial model gives us an additional interpretability of results by implementation of weights matrix based on the economic distances. Another advantage of such an empirical research presented in this article is the form of intersectoral mobility (highly aggregated data[1]).

2. Interindustry labour and wage mobility

Interindustry mobility (IM) can be understood as a cross-sectoral shift of workforce (Lilien, 1982; Wacziarg & Wallack, 2004) – intersectoral labor mobility (ILM). IM can also be defined as the degree of cross-sectoral shifts in wage differentiation (IWM – intersectoral mobility of wages). In the majority of studies (both theoretical and empirical), researchers try to explain the deter-

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[1] This analysis was based on 3rd Revision of ISIC (International Standard Industrial Classification of All Economic Activities). To avoid the non-comparability of results (missing data, different revisions of ISIC), the empirical analyses were performed with the use of data reduced to the same time dimension (1994-2012) for 20 OECD countries.

minants affecting the level of ILM and IWM. This leads to the conclusion that in studies on that relationship still difficulties exist in explaining its cause and effect, so there is a presumption that a hypothetical relationship might be called as feedback.

The ratio of ILM to the level of equal pay is a very popular subject of many studies in the literature, but rarely can meet its reference to the scale of IWM. Behind the titles of publications of this type it lies mostly the comparison of the ILM to the dynamics or growth of wage levels. In a study on the relationship between the mobility of employment and wage growth common conclusions can be found. Examples of such analyzes are works that led i.e.: Bartel and Borjas (1981), Mincer (1986), Topel and Ward (1992), Antel (1983), Antel (1986). It has been proven here that the mobility of resources leads to an increase in wages (usually 10 to 20 percent). Slightly cautious estimates can be found in: Antel (1983), Moore et al. (1998), McLaughlin (1990). There are many theoretical approaches that bind together the mobility of wage and labor force. The movers-stayers model presented by (Blumen, 1955; Ng & Chung, 2012) and is rooted in psychological arguments. In this model, some workers are expected to be more likely to move than others. More unstable units would therefore be less productive and would receive lower wages than others (stayers).

Other models that consider the connection between ILM and IWM are classified as static or dynamic due to the rejection of the assumptions about the dynamism of wages in the range of positions (Naticchioni & Panigo, 2004). The on-the-job search theory could therefore be classified as static, whereas e.g. current specific human capital theory as dynamic. Static models allow the inclusion of such an interdependency only in the range of the specific changes in occupation or industry, whereas dynamic models recognize changes in wages combined with shifts of resources between and in the range of the same occupation or sector. In search models it is most often indicated that shorter seniority is correlated with an increase in the level of wage mobility and that fact brings the most "profitable" gains in wage at the beginning of careers. The same conclusions are met by modification of that theory introduced by Jovanovic (1979) or Burdett (1978). In human capital theory (Becker, 1962; Light & McGarry, 1998) however, an inversed relationship between mobility of labor force and investments in specific job skills is indicated, but does not define clearly and precisely the relationship between ILM and IWM. It points out that the more specific the human capital transfers, the lower the expected decline in wages in relation to the expected mobility of employment. Another dynamic approach represents the theory, in which the employee is looking for job to find the best fit to his expectations. Jovanovic (1979) believed that the worse the quality of such a match, the shorter the period of employment and the increase of wage might be related to the reward for the search for a better fit, regardless of the accumulation of specific human capital. The job-match theory does not conclude directly on the exact relationship of ILM and IWM (Naticchioni & Panigo, 2004). It is a theoretical model where optimum conditions for job changes determine a positive correlation between the length of employment and short-term increases in the scale of mobility. Institutional factors can affect both the shift in the structure of employment and wages growth in a number of ways. In the first case, the legal protection of employment has a significant role in the dismissal of workers and new employment for a temporary period. The more flexible the labor market, the greater the expected effects might be met (mobility can have erosive effect on wages). In countries with a higher degree of employment security any changes can be more profitable, due to the fact that they are usually met among occupations/industries with relatively higher wages. Another important institutional factor is specific level of unemployment compensation. In more liberal economies we can expect longer periods of unemployment and increased wage gap of people losing their jobs (although

this effect is not as clear for people voluntarily changing jobs). They believe that wage formation process is influenced also by the degree of unionization and centralized, collective agreements. Countries with low level of union density and collective bargaining should record higher growth in real wages. Finally, the more decentralized collective agreements, the higher potential increases or decreases in wage levels (in terms of mobility) are expected.

3. Methodology

Interindustry mobility in majority of the empirical research is measured with the use of the individual micro-data. This entailed consequences in the application of specific statistical methods. Hence, most of the research rely on the same or very similar methodological solutions. The empirical analysis was performed in a few stages for 20 selected countries (for the period: 1994-2012), which are not in every case reciprocal neighbours. Thus, it was necessary to construct a spatial weights matrix based on economic distances (Pietrzak, 2010). The value of real GDP was chosen for that measure. This kind of technical nests inside the spatial model an additional interpretation of coefficients.

First stage of analysis covers calculations of Shorrocks (1978) mobility indices (for each country, its structure of wages and labor force, keeping 2-years subperiods). The measure proposed by Shorrocks belongs to the group of generalized entropy mobility measures (GEMM) and was generalized by Maasoumi and Zandvakili (1986). They allow us to observe the degree of structural substitution between employment or wages in different periods of time. In previously conducted studies Maasoumi (1998) concluded that those indices meet most of the requirements for mobility measurement. Let Y_{it} be the wage (or employment) for sector i in period $t=1,...,T$. Hence, the Shorrocks index of mobility (M) can be defined in formula (1).

$$M = 1 - \frac{I(S)}{\sum_{t=1}^{t} \alpha_t I(Y_t)} \tag{1}$$

where:
$S=(S_1,...,S_n)'$ is a vector of permanent or aggregated wages/employment in time T,
$Yt=(Y1t,...,Ynt)'$ is a vector of sectoral wages/employment in time t,
α_t is related weight and $I()$ stands for chosen inequality measure.

This measure is a negative function of the relative stability of the distribution and shows the ratio of long-term inequality (permanent and aggregate) $I(S)$ to the short-term inequality $I(Y_t)$. The level of mobility will increase if the long-term inequalities will be reduced more than the short-term. If the initial inequality of wages or employment of will be removed completely, the index will take a maximum value equal to 1. On the other hand, the total lack of mobility, here considered as total equality between the long- and short-term inequality will set the index to 0. For example, the value of M equal to 0.10 means that in the range of two years the inequality of distribution was reduced by 10 percent. As a result, mobility between sectors can thus be analyzed using the phenomenon of sectoral inequality. Jarvis and Jenkins (1998) emphasize that the inequality is much better tolerated in terms of mobility because it smooths out any short-term variability of distributions and therefore persistent irregularities are smaller than those observed. Through

the use of Shorrocks index we can have the possibility of a closer and more comprehensive look at the distribution of wages and employment. This fact, as well as simplicity in the construction of the index (1), make the indices constructed on this basis extremely popular and widely used in various types of empirical research.

In the second stage of analysis, the spatial autocorrelation for previously obtained wage and employment mobility measures was checked. According to the first law of geography formulated by Tobler (1970), all objects in space (observation units) interact, and spatial interactions are the greater, the smaller is the distance between objects. Thus, in the analysis and modeling of data located we must consider the spatial interactions, which may relate to both the dependent variable and the random component. In a situation where the value of the dependent variable in each location affect the value of this variable from other locations, there is the so-called spatial autoregression. On the other hand, a case where certain spatially autocorrelated variables are omitted or cannot be considered relates to spatial autocorrelation of the random component (Rogerson, 2001; Suchecki, 2010). The spatial autocorrelation is defined as "the degree of correlation of observed values of the variable at his different locations" (Suchecki & Olejnik, 2010). This means that the value of the modeled variable is related to values of the same variable in other locations, and the degree of relationship in accordance with Tobler's rule (closer objects are more relevant than distant) affect the relative position of objects and their geographical (or economic) distance. We can consider the specific relationship between the observation units (resulting from their location) thanks to the design of spatial weights matrix (Anselin, 1988). It is a square matrix with $n \times n$ dimensions, "which elements reflect the existing spatial structure" (Ludwiczak, 1991). Specification of that matrix belongs to arbitrary decisions taken by a researcher and a choice of the alternative method of weighing is often due to the knowledge of the spatial structure of the phenomenon and links between units (Kossowski, 2010; Łaszkiewicz, 2014a). It is assumed that links of spatial entities are positively affected by mutual proximity and negatively by shared distance (Łaszkiewicz, 2014b). Spatial weights matrix is a structure whose elements w_{ij} take the value 0 when the two objects i, j are not neighbors, and 1 otherwise. In order to construct a matrix of spatial weights based on economic distances by analogy the 0 and 1 value is selected as the euclidean distance and the optimal cut-off point (usually 0.5) is computed.

Specification of spatial weight matrices is a prerequisite and the first step in the analysis of spatial autocorrelation. Among many measures used for spatial relationships testing the most commonly used is Moran's I statistic (Longley et al., 2008). This statistic is calculated based on the formula (2).

$$I = \frac{n\sum_{i=1}^{n}\sum_{j=1}^{n}\left(z_i - \bar{z}\right)\left(z_j - \bar{z}\right)}{\sum_{i=1}^{n}\sum_{j=1}^{n}w_{ij}\sum_{i=1}^{n}\left(z_i - \bar{z}\right)^2} \qquad (2)$$

where:
n – number of observations (locations),
z_i – the observed value of the z variable for all n observations (locations),
w_{ij} – weight of spatial interactions (connections) between observations (locations) i and j.

The statistical significance of spatial autocorrelation measured by Moran's I statistic assuming null hypothesis of a random distribution of z-values (lack of spatial autocorrelation) is verified with the standardized normal Z_I statistic (Kossowski, 2010; Suchecki & Olejnik, 2010).

In the last stage of analysis, in case of spatial autocorrelation (Rogerson, 2001; Kossowski, 2010) two regression models with spatial effects were estimated[2]: SAR – spatial autoregressive models (also classified as spatial lag models – SLM) and spatial error model (SEM). The response to the negative impact of the spatial interaction to estimate the structural parameters of the OLS models is an implementation to the classical form of the regression equation an additional independent variable and its parameter of ρ relating to this variable (called spatial autoregression coefficient). This variable (spatial lag) determines spatially delayed values of dependent variable, calculated as a weighted average (according to the adopted spatial weights matrix) from the value of this variable occurring in the neighborhood (Suchecki, 2010). We can formulate SLM in equation (3).

$$y_r = \rho \left(\sum_{s=1}^{n} w_{rs} y_s \right) + \sum_{i=1}^{k} \beta_i x_{ir} + \varepsilon_r \tag{3}$$

The formula $\rho \left(\sum_{s=1}^{n} w_{rs} y_s \right)$ determines the impact of the dependent variables of the adjacent p-th locations (according to the matrix of spatial weights) on the value of the variable in the r-th location (Rogerson, 2001).

Spatial error model (SEM) allows us to consider the spatial dependence of the sampling error (Rogerson, 2001; Kopczewska, 2010). In this model, the overarching scheme of linear spatial autocorrelation of the random component is considered. It can be written as shown in equation (4).

$$y_r = \sum_{i=1}^{k} \beta_i x_{ir} + \varepsilon_r \tag{4}$$

$$\varepsilon_r = \lambda \left(\sum_{s=1}^{n} w_{rs} \varepsilon_s \right) + u_r \tag{5}$$

where ε_r presented in equation (5) stands for the original random component with spatial autocorrelation (residuals from OLS regression for r-th location), which is a function of spatially delayed random error $\sum_{s=1}^{n} w_{rs} \varepsilon_s$ (residuals from adjacent p-th locations) and "cleaned" random component u_r (that satisfies OLS assumptions). λ coefficient however, is a measure of interdependency of OLS residuals and on its basis we can infer the existence of significant factors influencing on values of dependent variable, which were not included in the regression model (i.e. unmeasurable or random factors) (Kopczewska, 2010; Kossowski, 2010; Suchecki, 2010).

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[2] It should be mentioned, that these are only the most popular examples of the wide range of spatial models reported in the literature multiplied with their numerous extensions and modifications.

4. Results

In the first stage of the analysis, the calculations of Shorrocks mobility indices were made (separately for labor and wage structures). In the second stage, for each subperiod and for previously calculated measures of mobility, a spatial autocorrelation Moran's measure was estimated (see Tab. 1). When spatial autocorrelation statistics are computed for variables, they assume constant variance. This is usually violated when the variables are for areas with greatly different populations. That is why the Assunção-Reis empirical Bayes standardization (Assunção & Reis, 1999) should be implemented here to correct it. For each subperiod (2-years) between 1994 and 2012 negative, statistically significant ($p < 0.01$) spatial autocorrelation statistics for ILM and IWM measures were obtained (from -0.2 in first subperiod to -0.27 in the last one). This was the basis for estimation of structural parameters of spatial regression models in the third stage of analysis (Rogerson, 2000; Kossowski, 2010).

Table 1. Moran's spatial autocorrelation statistics for interindustry labor and wage mobility (p-values in brackets)

Time period / Spatial autocorrelation	Interindustry wage mobility	Interindustry labor mobility
1994-1996	-0.209 (0.031)	-0.215 (0.001)
1996-1998	-0.276 (0.000)	-0.247 (0.000)
1998-2000	-0.277 (0.000)	-0.200 (0.036)
2000-2002	-0.205 (0.033)	-0.226 (0.000)
2002-2004	-0.201 (0.032)	-0.208 (0.030)
2004-2006	-0.208 (0.029)	-0.134 (0.035)
2006-2008	-0.274 (0.000)	-0.201 (0.039)
2008-2010	-0.201 (0.031)	-0.249 (0.011)
2010-2012	-0.239 (0.016)	-0.227 (0.019)

Source: own calculation.

Negative, statistically significant spatial autocorrelation statistics of both measures is the basis to make the estimation of the structural parameters of spatial regression models in the third stage of analysis (Rogerson, 2000; Kossowski, 2010). In Table 2 the results of an estimation of linear regression models LM and regression models based on the matrix of spatial weights: SEM (spatial error model) and SLM (spatial lagged model) in two opposite subperiods are presented.

Table 2. Estimation of linear and spatial regression functions for intersectoral mobility (p-values in brackets)

Interindustry labor mobility (ILM)	LM	SEM	SLM	LM	SEM	SLM
	1994-1996			2010-2012		
constant	0.003 (0.016)	0.003 (0.039)	-0.153 (0.017)	0.008 (0.010)	0.0087 (0.000)	0.008 (0.002)
Interindustry wage mobility (IWM)	0.319 (0.001)	0.3113 (0.000)	0.301 (0.000)	0.298 (0.001)	0.313 (0.000)	0.307 (0.000)
λ / ρ		-0.179 (0.035)	-0.153 (0.037)		-0.195 (0.013)	-0.187 (0.031)
R^2	0.536	0.538	0.553	0.626	0.664	0.632
Log-likelihood	82.680	82.710	83.032	84.838	85.672	84.979
Akaike criterion	-159.361	-159.420	-158.064	-163.678	-165.346	-157.977
LM		4.653 (0.030)	3.967 (0.045)		4.923 (0.026)	3.172 (0.074)

Source: own calculation.

The obtained results (presented in Tab. 2) have correct statistical properties (LR and BP tests, significance of coefficients, Akaike criterion, R^2) and the correct economic interpretation. The spatial regression models (both SLM and SEM) showed slightly better performance and statistical significance of parameters than linear model without spatial effects. Its strength however increased over time, so in the last subperiod the spatial error model proved us the highest (66.42%) determination coefficient and high statistical significance. The use of spatio-economic weight matrices gave us a very good fit of the model to the empirical data, which can be seen in the values of the logarithm of the likelihood function, values of the coefficient of determination and Akaike criterion. The considered matrix of such a specific type of spatial weights led to the discovery of negative spatial autocorrelation – the intensity of interindustry labor force and wage mobility for neighboring countries (in terms of economic proximity) occurred to be completely different. What is more, statistically significant relationship between ILM and IWM was synthesized in form of one final version of regression model (SEM) and highlighted the negative value of the correlated random component. This means that specific individual effects influence the intensity of both phenomena among OECD countries. It may be a recommendation for further research in this area in order to discover the causes of such a situation.

4. Conclusion

In this article the problem of use of the spatial weights matrix based on the economic distance within the framework of the author's analysis of interindustry mobility phenomena was presented. The results of empirical analysis indicate that in case of the research on employment and wage mobility even studies at the most aggregate level of observation should be taken into account. Furthermore, the assumption of the existence of certain spatially dependent variables significantly shapes the intensity of their interdependence. This means that the use of weights matrix based on the economic distance in statistical models of employment mobility greatly increases the correct

interpretive impact of explanatory variable like intersectoral wage mobility, and thus significantly improves the quality of research. The higher level of the interindustry wage mobility is accompanied by increased movement of labor force across sectors. Moreover, the strength of this association increased over time, also taking into account the spatial factor.

The presented results are mainly due to the more complete description of the spatial autocorrelation of interindustry mobility. The choice of the spatial form of the regression model caused a further significant improvement of explanatory abilities of the analysis.

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Chapter **8**

Crowdsourcing in Scientific Research – Opportunities and Limitations[1]

Małgorzata Marchewka

1. Introduction

The idea of crowdsourcing is rather new to academic research. However, the potential benefits to science through crowd seem interesting. The effects of involving a broader public (the crowd) in academic studies may vary from generating new data and finding solutions to specific questions to selecting ideas and identifying new research areas.

Taking into account the fact that crowdsourcing is relatively fast, at a low cost and also a geographically independent process, it can be considered as an innovative method of conducting studies and promoting its results. Moreover, online community can contribute to financing scientific projects. Nevertheless, the successful integration of crowdsourcing into academic research requires an identification of potential constraints, including intellectual property rights, limited reliability of the study, as well as consequences of public disclosure that particular research interests may reveal.

Given the assumption that crowdsourcing can be a useful tool in scientific research, the main objective of the article is to present the advantages and disadvantages of using various forms of crowdsourcing at different stages of a research process, i.e. including identification of a scientific problem, planning, conducting study, and data analysis and conclusions.

2. The idea of crowdsourcing

Crowdsourcing is a method of using collective intelligence and the potential of a crowd to solve given problems. This term was used for the first time in 2006 by J. Howe and is a combination of two words: crowd and outsourcing. It reflects the fundamental idea of a process during which a crowdsourcer invites an undefined group of contributors to voluntarily participate in solving a task presented in an open call. The main assumption is that the results of collective problem-solving exceeds the effects achievable through crowdsourcer's means.

Crowdsourcing refers to various forms of cooperation between a crowdsourcer and a crowd and many detailed classifications of the process have been presented. However, the categorisation introduced by J. Howe (2008) and further developed by I. Saur-Amaral (2015, p. 74) seems to be the simplest and the most comprehensive. According to Howe and Saur-Amaral four different forms of crowdsourcing can be distinguished:

- crowd wisdom – includes gathering and applying ideas acquired from a crowd to support an inner decision-making process, forecasting or solving of internal problems,
- crowd creation – basing on content creation and evaluation by a crowd,
- crowd voting – when a crowd is engaged in assessment and selection of content,
- crowdfunding – when a crowd participates in financing particular projects.

Apart from the fundamental concept of cooperation with a crowd which is common for all four forms of crowdsourcing, in each case the process consists of similar elements, which are as follows: a crowdsourcer, a task, an open call to a crowd, a crowd, a type of the process, an Internet platform, benefits for crowdworkers, and benefits for a crowdsourcer (Estelles Arolas & Gonzalez Ladron De Guevara, 2012, p. 284).

A crowdsourcer, which could be a company, a non-profit organisation, or a research institution, initiates a process by making a decision to search for solutions outside their own organisation. At the same time a crowdsourcer defines requirements determining the flow of ideas into and out of an organisation.

The second element is the task or problem that is supposed to be outsourced to a crowd. Contrary to common-sense expectation, it is not its complexity that limits the possibility of its transmission. Crowdworkers may contribute to routine, complex, and creative tasks (Busarovs, 2001, p. 54) unless the problem is well described and can be divided into clearly defined modules (Afuah, & Tucci, 2012, pp. 361-364). It is worth mentioning that a task not necessarily must regard solving a problem, but can also concern identifying problems and needs (Blohm, Leimeister & Krcmar, 2013, p. 204).

Broadcasting a problem to an unknown group of solvers is the next element of the process (PT in Motion, 2013). Open call is strongly linked to a task as it includes its formal description, a context, as well as both technical and process requirements (Luttgens et al., 2014, p. 345).

People engaged in solving problems are called a crowd. The main assumption is that a crowd poses all necessary skills and knowledge not only to cope with a given task, but also to perform better than a closed group of specialists. In order to enhance a crowd's potential it should be diversified, its members should be independent, and when within a process of solving problems – decentralized (Surowiecki, 2004, p. 10).

The fifth element regards the type of process. Two types are most popular: cooperation and crowdcasting (Blohm, Leimeister & Krcmar, 2013, p. 200). In the first case, a crowd works together on particular solutions or content creation. Participants may also collectively assess ideas and select the best proposals. Conversely, crowdcasting is based on the competition between participants who present their individual ideas and usually it is a crowdsourcer who chooses a winner.

The following element is an Internet platform that enables the conducting of a process. On the one hand its construction determines the way participants proceed with their contributions, and on the other – it defines a framework of communication among participants, as well as between crowdsourcer and crowd. The most frequent practice is through the use of one innovation broker platforms such as InnoCentive or OpenIDEO. It is possible to develop one's own platform, but this solution is less often used.

Finally, crowdsourcing must result in positive outcome for both the crowdsourcer and crowd. Some participants are engaged in the process because of financial reward, which is – depending on a task complexity – paid in cents, dollars or even in millions of dollars (Busarovs, 2011, p. 54). Some others contribute because of personal and altruistic motivations, such as participating in significant research, fulfilment of an interest in a particular problem, improving skills, gaining experience and acquiring knowledge, form of status, and feeling of gratification (Dunn & Hedges, 2013, pp. 152-153). Moreover, by participation in crowdsourcing crowd members may develop their own portfolio or build prospective professional relationships (Brabham, 2013, p. 68).

The direct results of crowdsourcing for the crowdsourcer may be at variance with the creation of solutions to given problems, the selection of ideas, and identification of different areas of innovation, up to the financing of projects. Specific effects of crowdsourcing in scientific research are discussed in the next part of the article.

3. Crowdsourcing in scientific research

The idea of crowdsourcing is not popular in academic research as yet, especially in Poland. Despite the fact that the contribution of a crowd may be beneficial for academics, it also carries significant threats. Integration of crowdsourcing into the research requires the analysis of opportunities and limitations at different stages of a study. Figure 1 illustrates possibilities of using various forms of crowdsourcing throughout a research process, which can be divided into following stages: identification of a problem, planning, conducting study, and data analysis and conclusions.

Figure 1. Possibilities of using various forms of crowdsourcing at different stages of a research process
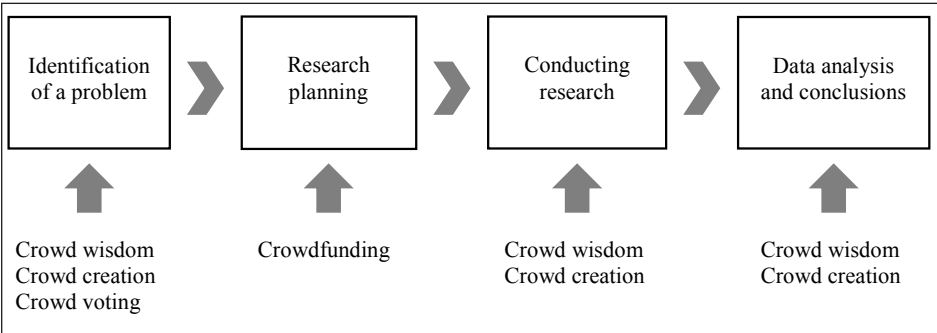
Source: own work.

3.1. Identification of a scientific problem

At the beginning of every study, a scientific problem must be formulated. Owing to crowd wisdom and crowd creation academics may have a deeper insight into actual and real problems that should be solved, but not necessarily included in the main stream of scientific studies (Del Savio, Prainsack & Buyx, 2016). Crowdsourcing can serve not only as a method of solving problems, but also as a tool of their identification (Blohm, Leimeister & Krcmar, 2013, p. 204). Finally, par-

ticipants may be involved in crowd voting in order to select a research area. While it can enhance originality of the ideas, non-specialist crowdworkers may not be aware of the fact that a problem has been already under scientific scrutiny.

3.2. Research planning

Some believe that a crowd could be fully engaged during the whole research process, including planning and designing a study. However, the majority of scientists agree that participants should have limited impact at this stage as they usually lack credentials in this field (Del Savio, Prainsack & Buyx, 2016, p. 4). In other words, broadly understood framework of scientific study, i.e. conceptualisation, formulation of hypothesis, operationalisation of variables, and selection of research methods and tools (Brzeziński, 2011), should be imposed by specialists.

Apart from the professional design of a study, a comprehensive research plan ought to include information about potential sources of financing a study. Crowdfunding may be applied at this stage. As traditional funders often reject projects concerning non-mainstream issues thus crowdfunding at this stage may function as an alternative way of acquiring funds. Popular platforms dedicated to crowdfunding in science are petridish.org, USEED, Consano, and experiment.com.

Financial support of a crowd for a particular project is a sign of social interest and perceived importance of a research problem. In fact crowd members are the most willing supporters of projects in fields such as biology or medicine. A brief analysis of project funded by users of experiment. com show that out of 707 accomplished projects only 9 concerned economics and management. For instance, Josh Wei-Jun Hsueh from Bocconi University (Italy) managed to collect nearly 1500 dollars for a project titled "How do companies repair their reputation after scandals?"; Nneoma Stephanie Nwobilor and Imuetinyan Aiguwurhuo (University of San Francisco, USA) raised almost 3000 dollars for the project titled "Supporting Women's Economic Entrepreneurship in Abuja, Nigeria: An Economic Experiment"; and Julia Mossbridge (Northwestern University, USA) and her international team raised over 26000 dollars for the project titled "Can our unconscious minds predict the stock market?".

3.3. Conducting research

Crowd involvement at the stage of gathering data and solving problems can vary according to the domain of a study. C. Franzoni and H. Sauermann (2014) gathered data regarding 45 examples of crowd science projects out of which over 20 were related to biology, genetics, and medicine. Within these fields, a crowd can provide scientists with samplesandpersonal data about symptoms and treatment of diseases. For example, uBiome collects donations through crowdfunding platforms in exchange for an individual analysis of participants gut bacteria (Del Savio, Prainsack & Buyx, 2016, p. 4) and such, money and samples are acquired simultaneously.

Owing to crowdsourcing, scientist gain easier access to big data, reduce cost of survey, and speed up time-consuming studies. However, given that the reliability of research depends on representativeness of a sample, it must be emphasized that crowd members are not randomly chosen, but declare their engagement voluntarily. It implies that a crowd involved in the process consists of people who are educated and wealthy enough to care about academic studies (Del Savio, Prainsack & Buyx, 2016, p. 12).

These forms of participation are relatively simple and do not allow participants to contribute with their creativity and innovativeness. According to C. Franzoni and H. Sauermann (2014, pp. 3-5), more advanced involvement is illustrated by the cases when a crowd is asked among others to inspect seafloor images, identify and report target species (platform Zooniverse) or to observe nest activities (eggs, young, fledglings) and report count (Cornell Lab of Ornithology). Users participating in crowdsourcing in humanities research, in particular in the Galleries, Libraries, Archives and Museums sector, also face more challenging tasks, such as collaborative tagging, linking, correcting or modifying content, transcribing, and commenting (Dunn & Hedges, 2013, p. 157).

An example of the most complex projects are Polymath-projects, in which participants contribute to collective problem-solving (i.e. solving a mathematical problem or proving a mathematical conjecture), requiring domain-specific, mathematical skills and are involved in interdependent subtasks (Franzoni & Sauermann, 2014, p. 11). At this stage, crowd wisdom and crowd creation can enhance the quality of research.

3.4. Data analysis and conclusions

During the final stage of research process, a crowd can be engaged in data processing (PT in Motion, 2013). As routine and tedious data analysis may be outsourced to crowd members, time and cost of study is reduced. Given the diversity of a crowd and their background, unconventional conclusions can be derived. Nevertheless, lack of credentials can cause violation of propositional logic and methods of inference. Additionally, the most influential and opinion-forming participant may distort the conclusions.

Below, Table 1 summarises the analysis of opportunities and limitations of utilising crowdsourcing throughout different stages of scientific research.

Table 1. Opportunities and limitations of using crowdsourcing in research process

Stages of research process	Opportunities	Limitations
Identification of a research problem	Search for problems out of the main stream of studies Identification of actual and real research problem	Violation of intellectual property rights Public disclosure of research interests
Research planning	Alternative to traditional sources of financing Enhancement of interest and engagement of public into scientific research	Not every research project deserves support Inadequate evaluation of research value
Conducting research	Broad access to samples and other data Problem solving potential Lower cost of conducting studies Better quality of research Speeding up research	Violation of intellectual property rights Doubts about personal data safety Limited representativeness of participants Honesty of participants Limited reliability of the study

Data analysis and conclusions	Data processing Unconventional conclusions	Manipulation of the results of crowd work by the most opinion-forming users Violation of propositional logic and methods of inference

Source: own work.

Finally crowdsourcing may facilitate presentation and popularisation of the research results. Engagement of the public in research helps to gain the attention of society as well as translating scientific results into practical outcomes (Jasiński, 2011).

4. Conclusion

In conclusion, the successful integration of crowdsourcing into academic research, both quantitative and qualitative, requires a positive answer to the question whether crowdsourcing fits within the framework of a particular scientific study. It is subsequently necessary to analyse characteristics of the study and to make conceptual decisions concerning inter alia the task presented to the crowd. Some authors claim that crowdsourcing can be particularly useful in economics and management in studies concerning market information processing and improvement of market-oriented predictions (ex. consumer preferences or competitors reactions) and business forecasts (Lang, Bharadwaj & Di Benedetto, 2016, p. 4168).

Crowdsourcing can result in cost reduction, enhancement of research quality, and broader access to data. Nevertheless, these benefits are hard to achieve in scientific disciplines that require long formal training (Del Savio, Prainsack & Buyx, 2016, p. 11). Equally important to the evaluation of potential benefits is the identification of possible internal problems such as deterioration of research reliability or the representativeness of a sample. Also it is imperative to take into account external constraints including intellectual property rights and the consequences of public disclosure of any future strategy.

Crowdsourcing can significantly facilitate dialogue between researchers and society (Del Savio, Prainsack & Buyx, 2016) and introduce greater transparency of scientific research (Cullina, Conboy & Morgan, 2014, p. 11). However, the results of a study conducted by researchers from the University of Pennsylvania on utilising crowdsourcing in scientific research suggest that "standardised guidelines are needed on crowdsourcing metrics that should be collected and reported to provide clarity and comparability in methods" (PT in Motion, 2013, p. 10). One key requirement has been identified by C. Franzoni and H. Sauermann (2014, p. 13), in which they cite a need for organisational mechanisms that will allow effective matching of projects and potential participants. Future studies on crowdsourcing in scientific research should be focused on identification of such standardized guidelines.

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Commercialization Potential at the Entrepreneurial University[1]

Tomasz Kusio

1. Introduction

Creating research offer by the university for the entrepreneurs is one of paths of so called entrepreneurial university which a university should follow for good preparation for the forthcoming development of the research market. Another possibility, which is strongly discussed, is the increased activity of universities in implementing innovative solutions through academic start-ups. It is one of the commercialization models that, apart from selling property rights or licensing, university may implement. Creating and empowering commercial potential of a university is of a great value. Such potential can be create by both proper research management and building of social capital. The aim of the paper is to present the reflections on the commercialization of results of various types of researches and the place of modern university in the creation of research market.

2. Market potential for scientific solutions

Research can have both a purely cognitive goal but can also serve specific practical purposes. According to the definition of the Central Statistical Office, research and development, often referred to as R&D, includes "systematically carried out creative work undertaken to increase knowledge, including knowledge of man, culture and society, as well as to find new applications of this knowledge" (Bąk & Kulawczyk, 2009, p. 9).

Some studies seem to have a direct utilitarian nature, while others appear to have a more "traditional" dimension. While some studies can be directly linked to the economic application of their results, it is difficult to determine, in the case of basic research, how long it will take before economic benefits can be attributed to the results of these studies. A consistent view of the need for all types of research seems to be that even industrial research, which is directly and visibly relevant to economic practice, can be conducted and even based on the results of basic research. So

the nature of scientific research implies their self-completion. Science should be a learning system where the knowledge base grows in the cognitive and practical context. It should also be characterized by active dissemination of knowledge. According to this approach there is a need to integrate basic research, development and applied research (Bal-Woźniak, 2012, p. 153).

The idea itself is not yet innovation. As a result of research conducted at universities, researchers are able to observe new phenomena and are able to define and describe them. Thus confirms or overturns research hypotheses. There is also a scientific discussion about the subject matter of the research concerned.

The process of research commercialization starts when a new solution is emerging that is economically feasible and promises to improve the quality of life. The solution should also be economically profitable in terms of products or services sale.

The introduction of new solutions to business practice can be started when their financial feasibility is evaluated in market prognosis.

Implementing an innovative solution to business practice should be accompanied by a recognition of market potential. Recognizing the market use of a scientific solution is a subjective process. Entrepreneurs represent different areas of expertise as is the case in science. Apart from the fact that entrepreneurs can search for the interesting research results within the existing databases, an alternative option is the possibility of ordering specific studies or undertaking an independent initiative to conduct targeted research activities with the expected results. Only if trying to solve the problem itself will not produce the expected results, it will be possible to appeal to an external search. There are different variants of obtaining research results when talking about solutions interesting for business partners. One of them is obtaining innovative solutions based on own organizational research and another one is gaining innovative solutions from the outside. From the point of view of the solutions giver, which means the context of external solutions for a company, it is important, to adequately disseminate the results of the research, as well as the appropriate presentation of them, indicating the possible paths of implementation. Own organizational resources do not always allow to achieve such satisfactory results which could then be the source of innovation, that is, the solution introduced into the business practice. Where it is necessary to rely on external resources, it is possible to search for and reach out to the solutions already developed, to commission specific surveys or to joint research projects. In any case, there is a financial issue.

3. Financing research

Funding research is a matter of a great concern both in national and international terms. On one hand, there is a need for the highest level of research funding, on the other hand there are usually discussed cases for budget cuts for higher education. The problem is a desire to increase the level of research funding, but of external origin. The expected variant is the one when the level of funding streams would be approx. but no less than 3% of GDP, most of which would be external financing.

The chance for a commercialization of research results will increase in the well-planned and managed research and implementation project, culminating in a scientific solution, prototype or technology ready for commercialization (Markiewicz, 2009, p. 57). A factor that has a major impact on the economic use of research, i.e. commercialization, is the source of funding.

The streams of research funding in Poland mostly come from government institutions. Revenues from education account for as much as 77% of the total income from the sector, with nearly half

coming from student fees (with a very varied quality of paid tuition services). Other incomes – in part from the sale and rental of assets – represents 8% of the total financing. Of the 14% of research income, only slightly more than half are funds from competitive grants and corporate orders. In case of research institutes, "soft" statutory financing and revenue from the sale and rental of assets was crucial (Orłowski, 2013, p. 29).

School management practitioners pointed to the need for min. 50% of the total university budget to be granted by the state (Tadeusiewicz & Woźnicki, 1999, p. 190), keeping in mind the compatibility with the social function of the higher school. As min. 60% of the university budget they acknowledge the participation of didactic activity. It can be roughly assumed that the share of external research funding could be between 15-20% of the total university budget. External funding for research is both private and public. The implemented and successfully functioning competition funding system for research is a part of the process leading to the increase of the share of external funding for research. Financial programs dedicated to science exist at both national and supranational level, including Europe. The creation of an external financing mechanism is obviously a solution that supports the external financing model. The effectiveness of applying for funding will depend on the degree to which the institution is able to obtain external funding.

The low level of R&D spending, in relation to GDP (GERD), is widely regarded as the main cause of the low level of KBE (Knowledge Based Economy) development in Poland.

Low cost:

- restrict access to knowledge (e.g. lack of funds for attending conferences, purchasing books), and the possibility of costly research (lack of work tools);
- translate into unsatisfactory earnings for workers in the sector, discouraging some of their potential employees, and causing academics to spend part of their time on work for others (multitasking).

In practice this is one of the major barriers – it limits the inflow of new knowledge and the development of the current one. It causes the existing intellectual capital to be used to a small extent (Wojnarowska & Wróbel, 2009, p. 65). According to W. Orłowski (2013), the market for scientific research is the financial flows from enterprises to universities, and those in the national scale in terms of GDP were 0.03%, which means the practical lack of R&D market in Poland. Enterprises spend R&D on 28% of all expenditures spent in the country (PLN 3.3bn, or 0.23% of GDP), overwhelmingly financed from own resources (with no significant tax credits) and 9/10 conducting own research (Wojnarowska & Wróbel, 2009, pp. 24-25).

From the presented analysis, it is clear that a significant problem with external funding of non-public research is the low willingness of companies to order research at national universities. A similar unfavorable financial trend indicates the need to draw attention to the mechanisms of cooperation between universities and businesses, those large but also small and medium sized, in the context of creating innovative solutions.

4. Geographical conditions of commercialization

As A. Varga points out (Varga & Szerb, 2002, pp. 162-163), there is a link between research spending in a given center or centers, and economic efficiency in the territory where these investments are located. Observations show (Feldman, 1994, pp. 66-67), that for spill-over emergence, which in commercialization context means co-operation and implementation of innovative solutions needed in a given region, it is necessary to finance research as well as to appear the "critical

mass" of high technology enterprises, production facilities, venture capital and entrepreneurial culture. The spatial concentration of high technology production and business services provides a definite positive effect along with the intensive local knowledge-academia flow. It is also worth mentioning the relationship between the costs of knowledge transmission and geographic distance increase. This dependence, at a later stage, has an impact on the direction of the desired impact of the university.

The question arises to what extent the university and to what extent the business are responsible for the creation of the research market. Certainly the activity on both sides is important. Enterprise-side activity appears as the need for innovation increases, which in turn results from the need to be more competitive. Science-side activity appears in response to the current research market growth. Universities should, in their communication policies, take into account relations with local actors in the manufacturing, trade and business-related markets. Universities have different specializations, so their role in contacts and cooperation with businesses can also be vary.

The relationship of a commercial nature that is created between a university and an external entity results from the need to obtain practical benefit by a client (Tadeusiewicz & Woźnicki, 1999, p. 188). Securing the performance of the service, but also getting paid for it, is a written contract. The determinant of the cooperation between the university and an external subject interested in obtaining specific research results is the need to achieve a specific effect for practical benefit. However, ordering research does not have to be of a practical dimension.

5. Quality of knowledge transfer

K. Leja (2005, pp. 152-153) points to the importance of the flow of knowledge from the university to the outside world, and the need to improve the flow of this knowledge. It is important, at the stage of the flow of knowledge, of its transformation from hidden into explicit knowledge. The knowledge referred to as hidden is understood by the original holder. In turn, the open knowledge should have a clear message, understandable to the recipient, who is not an expert. It is said at this point about the so-called. "externalization", i.e. the conversion of hidden knowledge into knowledge available. The quality of the message is also important, and the more attractive and understandable the message is, the wider audience is able to remember the message. The definition of knowledge in the literature has a different dimension (Tab. 1), however taking into consideration the transfer of knowledge (science to business), K. Leja's observations seem to be very apt.

Table 1. Classification of various types of knowledge

	Degree of codification	Its manufacturers	Degree of disclosure
Know why	Fully codified	Universities and state research laboratories	Fully disclosed and published in specialized scientific journals
Know what	Fully codified	Universities and state research laboratories and private enterprises	Fully disclosed in the form of patents
Know how	Uncodified	Laboratories	Hidden: limited spread

| Know who | uncodified | There are inside companies or research communities | Hidden: its spread is limited to the boundaries of the research community |

Source: (Marszałek, 2009, p. 22).

The proper "preparation" of transferring knowledge from science to business is just the beginning, however this element of commercialization process is the one of greatest universities impact. The efficient management of research and the results of research should, in effect, result in a ready, clear, clear and legible message that has been worked out and can be used. In the next steps of commercialization, a kind of knowledge transfer is important.

According to A. Varga, knowledge transfer mechanisms can be divided into three main categories (Varga & Szerb, 2005, p. 148):

- Formal and informal transmission of knowledge through local university-industrial relations networks (university-business research cooperation, local job market of graduates, university staff consultations, university seminars, conferences, student internships, local professional associations, continuing education by employees enterprises),
- technology diffusion through formalized business relationships (academic companies, technology licensing),
- transfer of knowledge through the use of academic equipment (library, research laboratories, computer equipment, research parks located on the campus).

It is necessary for the acquisition of external capital, especially for commercial ones, to prepare the innovation offer, for the implementation of which the funds are sought. Ideas, apart from the description of their merits in the context of innovation, still need to point to the positive financial dimension of their use in the economy. From this point of view the description of the solution itself should be accompanied by financial calculations – the assessment of the economic effectiveness of the project. Only the appropriate financial presentation of the benefits of implementing a solution may help to convince investors of the adequacy and purposefulness of the investment (Halik, Kusio & Makowiec, 2012, pp. 41-58).

Universities disseminate and distribute knowledge, but they do not protect it so that it is of interest to businesses. Knowledge of businesses is the one which is protected, which is unknown or overly familiar, or possesses features that allow them to gain a competitive edge that can sustain for some time so that competitors do not have time to choke on the product or a service that they believe has the potential to break through and bring financial effects to the company.

6. Conclusion

Higher education research activities lead to innovative solutions that can be implemented in business practice by small, medium and large enterprises. The dynamics of the implementation affects the innovativeness of the economy and stimulates local, regional and, in the case of breakthroughs, national or even global markets. Research can be both fundamental as well as applied which effects can be directly implemented in economic practice. It is important to remember that every type of research has an impact on the development of ideas that influences business development.

The nature of scientific research implies their self-completion. The development of basic research has implications for applied research and development work. From the point of view

of implementing innovative solutions, applied research and development work are directly targeted towards achieving results that are subsequently intended to serve as innovative solutions.

In national terms, conducting research for direct economic applications is, to a large extent, carried out by entities interested in these uses, i.e. companies. However, not always internal resources are sufficient to achieve satisfactory, expected effects. Therefore, there is a need for external resources, among which the first choices are university resources. The work carried out by research units brings effects whose commercialization capacities vary. Commercialization capacity is a determinant of the ability and ease of research results implementation into economic practice. In other words, this is the determinant of the feasibility of the results of scientific research in business practice. The commercialization capacity of scientific research can be increased by promotion of its usage benefits, as well as indication of industries where these results could be implemented. Advantages of implementing the research results are those of a financial nature, i.e. savings and those of a utilitarian nature, i.e. higher quality and efficiency.

When talking about research results implementation, apart from the commercialization capacity also both geographic and research funding conditions influence its dynamics. The concentration of the so-called "critical mass" of enterprises, universities and technology transfer institutions determines the intensification of implementations. This also stimulates the processes of implementing improvements on a territorial basis. Focusing of the adequate number of active entrepreneurial actors in a given area stimulates the development of this region precisely through the implementation of improvements.

Research funding should be sufficiently high for the development aspirations of the region or country. Public funding mainly goes to public entities, while non-public funding is directed mainly to R&D company departments. However, internal resources are not often sufficient to achieve satisfactory results. The quality and availability of university resources, both material and non-material, should be regarded as the determinants of industry-university direction of research demand direction and university-business innovative solutions supply direction.

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Chapter 10

The Potential of Academic Entrepreneurship in the Region of Częstochowa

Katarzyna Brendzel-Skowera

1. Introduction

Academic entrepreneurship is one of the dimensions of entrepreneurship developed at the intersection of science and economy. This term is deemed to include, among others, the development of proactive behavior of academia allowing for individual operation on the market, commercialization of the results of scientific research, establishing spin-offs and also the way and model of university management. From the point of view of the degree of innovativeness of the Polish economy, commercialization of the results of scientific research, being the result of the cooperation of science and business, is of the key importance. In the present study, there has been made an attempt to assess the scale of the phenomenon of academic entrepreneurship in the region of Częstochowa. The key ones are the areas of academic entrepreneurship such as the potential of researchers and also the willingness of researchers to cooperate with business partners. The research presented in the paper is a pilot study and has been to verify the knowledge of commercialization of the results of research works in the region of Częstochowa. The research results have indicated some aspects of the analyzed problem that should be refined in the main research concerning the cooperation in regional environments for the benefit of development of academic entrepreneurship.

2. Commercialization of scientific research results

One of the pillars of academic entrepreneurship is the transfer of technologies to the economy, which is the third, next to education and science development, task of universities. Universities must strive to improve the quality of education if they want to be leaders in the education market. At the same time, the reputation of the university is determined by scientific achievements whereas efficient commercialization must always be a derivative of knowledge and good scientific proficiency (Dzierżanowski et al., 2009). The process of implementation and offering of an innovative product (technology) to customers is assumed to be known as commercialization (Klimcewicz, 2011). Commercialization is the whole of actions aimed at transferring knowledge from laboratories to the market (Kluczek, 2011, p. 117). Commercialization may be referred both to the product

and technology, it is an important link of the value chain of innovation. Commercialization is also defined as (Kalinowski & Uryszek, 2009, pp. 38-39):

- actions associated with building the business model of technology,
- developing the process of sale or implementation of technology in the market,
- making something of the potential value and ability to bring profit be sold, produced, shared or used in order to generate profit or create capital,
- building value added of technology.

Basically, commercialization begins already at the stage of creating the concept of innovation in its practical form and is associated with personalization of future recipients of the arising product. Therefore, it requires the complex approach that should include the area of the whole chain of creating value (Wściubiak, 2009).

The process of commercialization of the results of scientific research works is a very important factor stimulating the development of the university. The university, while getting involved in the transfer of technology, apart from revenues from sale/licenses of intellectual property rights, also receives intangible benefits, which create its image in the eyes of potential students and the local environment (Daroń &Wójcik-Mazur, 2014). Most of all, it is possible to raise the teaching standards resulting from the acquisition of practical competences by researchers. The confrontation of the results of academic work with the needs of the economic environment provides an opportunity to verify the usefulness of information transmitted to students. At the same time, successful industrial projects are the guarantee for students that the knowledge transmitted by lecturers is useful on the labor market (Dzierżanowski et al., 2009).

Active cooperation with the economic environment may be associated with the implementation of targeted and development projects and simultaneously more grants for the research. The reception of donations from companies for the benefit of the university also becomes more probable. This allows to finance the development of the laboratory base. This directly translates into a long term increase in the scientific potential while attracting students and customers. The university which is able to earn the reputation of a competent research and development unit will be a trustworthy partner in scientific and economic cooperation (Brendzel-Skowera & Łukasik, 2017).

To make the process of technology transfer be properly implemented and bring benefits a great scientific potential of the university is necessary. If there are no competences, even the most perfect tools of technology transfer will not be effective, and the financial resources for commercialization will be wasted. Therefore, both researchers and their development are so important. Entrepreneurial attitudes of the researchers who carry out the research which has a chance to be applied in the economic practice, the ones who attempt to commercialize the results of their scientific works, get involved in projects and establish cooperation with entrepreneurs and other institutions of the environment, are very important. The listed aspects are crucial from the point of view of management of university development, which is also inscribed in academic entrepreneurship. These considerations justify undertaking the research on the potential of researchers in the field of commercialization of the results of the conducted works.

3. Research method

The aim of the paper is the analysis of the potential of the researchers of Częstochowa University of Technology (CUT) in the area of technology transfer. The term of 'the region of Częstochowa'

in the present paper is understood as the area of the city of Częstochowa and the neighboring municipalities: Kłobuck, Wręczyca Wielka, Blachownia, Konopiska, Poczesna, Olsztyn, Mstów, Rędziny, Mykanów. Częstochowa, along with the listed municipalities, is the central part of the northern subregion of the Silesian Voivodeship. In the city, there are six universities, including two state ones: Jan Długosz University of Częstochowa and Częstochowa University of Technology. The other ones are private universities: Polonia University, Wyższa Szkoła Zarządzania (College of Management), Centrum Języków Europejskich (Center of European Languages) and University College of Social Sciences. The research was conducted in the period of April – May 2017 using the questionnaire designed via the website – Interankiety.pl. The reason for the use of such a tool was mostly the ease and little effort needed to fill in an electronic questionnaire, which encourages the respondents to take part in the survey. The questionnaire included 27 questions concerning the following research areas: understanding the concept of academic entrepreneurship, assessment of the application potential of scientific fields represented by the respondents, knowledge and assessment of the institutions supporting the development of academic entrepreneurship, knowledge of the provisions concerning intellectual property management in parent units, involvement of the researchers in research and development projects, commercialization of scientific research results, the reasons for not establishing the cooperation with enterprises, spin-offs/spin-outs originating from the academia of Częstochowa.

The questionnaire was addressed to 135 researchers of Częstochowa University of Technology. Ultimately, 86 respondents took part in the research. The research was a pilot study and its objective was to initially determine the potential of the researchers of the University of Częstochowa for commercialization of scientific research results. The main research concerning the cooperation in regional environments for the benefit of the development of academic entrepreneurship will be conducted taking into account all the partners, i.e. enterprises, universities and environment institutions. The pilot study was to indicate the most important problems in commercialization of scientific research results from the point of view of the researchers of Czestochowa University of Technology as well as to point out the aspects of the analyzed issue which must be taken into account in the main research.

4. The ocean of the potential of the researchers of Czestochowa University of Technology in the area of commercialization of scientific research results

The group of the respondents was exclusively the research and teaching staff of whom the majority (63%) with the job experience in science of 10 to 20 years, 26% – of more than 20 years, 8% – from 5 to 10 years and 3% – less than 5 years. More than half of the employees also have the experience of working in the company, among whom the largest group is the employees with the job experience in business of more than 7 years – 16% (Fig. 1).

Figure 1. What is your overall job experience in the business sector?
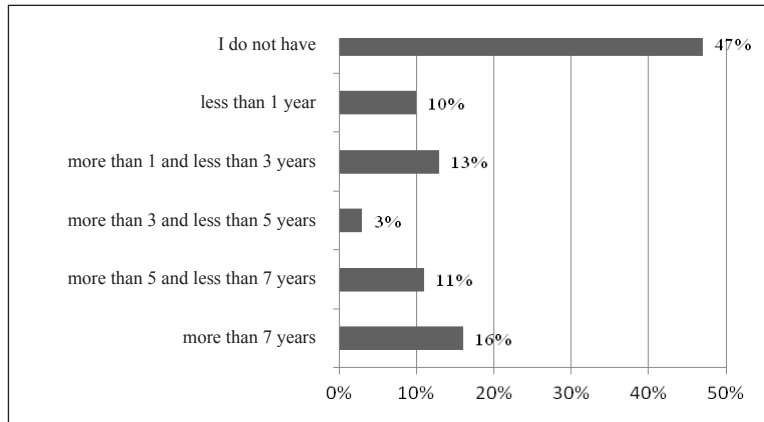
Source: own study.

In the question concerning the meaning of the concept of academic entrepreneurship, the respondents could indicate any number of responses which, in their opinion, define the discussed phenomenon. The majority of the respondents (95%) understand the term of 'academic entrepreneurship' in a broad context and identifies it with setting up companies by the members of the academia, i.e. by researchers, students and graduates. 55% of the indications was received by the response which defines academic entrepreneurship as sale and licensing of intellectual property rights. On the other hand, 'embracing shares/stocks in companies by the scientific unit in exchange for bringing intellectual property rights' received 32% of indications. The responses given to this question indicate that the concept of academic entrepreneurship is known to researchers, however, it is more often associated with the general concept of entrepreneurship than commercialization of scientific research results (Tab. 1).

Table 1. Defining academic entrepreneurship by the employees of Częstochowa University of Technology

Academic entrepreneurship by the surveyed research staff	Number of indications (%)
Establishing companies by students, graduates and researchers	95
Sale and licensing of intellectual property rights, which arises in the scientific unit	55
Active searching for students, graduates and employees in innovative companies	34
Embracing shares/stocks in companies by the scientific unit in exchange for bringing intellectual property rights	32
Activity in student organizations and scientific circles	26
Others	3

Source: own study.

The analysis of the industrial potential of academic entrepreneurship indicates that, in terms of the application potential of scientific fields, in the opinion of the researchers of Częstochowa University of Technology, the following should be acknowledged as the leading ones: computer science and IT, mechanical engineering and materials engineering. The research results in the framework of the listed fields have significant chances for practical implementation (Tab. 2). In the table below, there are included only the fields of science represented by the researchers of CUT taking part in the research.

Table 2. The assessment of the application potential of the fields of science by the respondents

Field of science	The field of science has great application potential in enterprises	The field of science is at a very high level in the Silesian Voivodeship	The research results in this field have a great chance for finding practical application	The research results are not directly applicable in business
Computer science and IT	100%	100%	100%	0%
Earth and environmental science	84%	52%	89%	11%
Mechanical engineering	100%	93%	100%	0%
Materials engineering	100%	98%	99%	1%
Medical engineering	98%	92%	100%	0%
Economics and business	48 %	31%	35%	65%
Social sciences	0%	8%	1%	99%

Source: own study.

The presented data indicate that the application potential of economics and business and social sciences received the worst rating. In the opinion of the respondents, the research results for these fields of science are rather not directly applicable in business.

The knowledge and scale of the use of the offer of institutions supporting academic entrepreneurship was also subjected to the research. Most researchers have knowledge of whether such a unit is operating at their university (68%), whereas very few have used the services of such institutions (11%) (Fig. 2). However, those who benefited from the services of these institutions highly and very highly appreciate their usefulness (each of the responses received 50% of indications).

Figure 2. Knowledge and use of the services of institutions supporting academic entrepreneurship in Czestochowa University of Technology
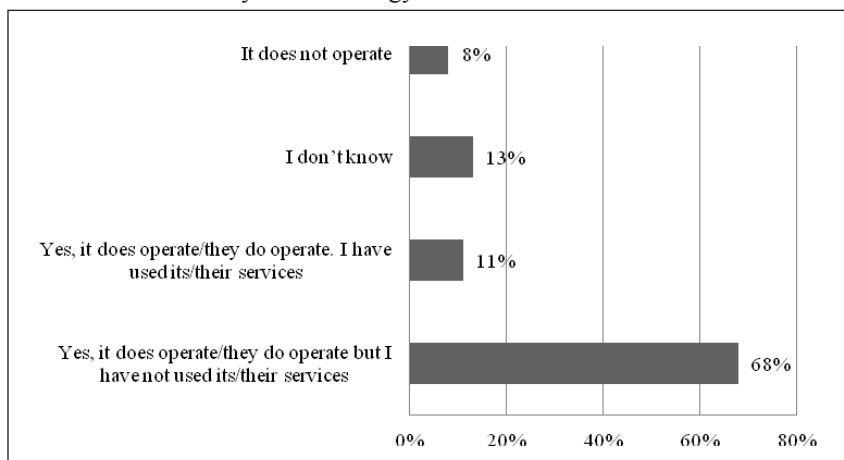
Source: own study.

The researchers who know the units supporting academic entrepreneurship in their university and have not used their services, as the main reasons, indicate a lack of interest in their offer, discrepancy between their needs and the offer of these units and low quality of the provided services. In the category of *others* there are mainly the responses concerning low advancement of the research conducted by the researcher or low application potential or the response such as 'no time'. 5% of the employees of this group individually implement the results of their research (Fig. 3).

Figure 3. The reasons for not using the services of the unit supporting academic entrepreneurship operating at Czestochowa University of Technology
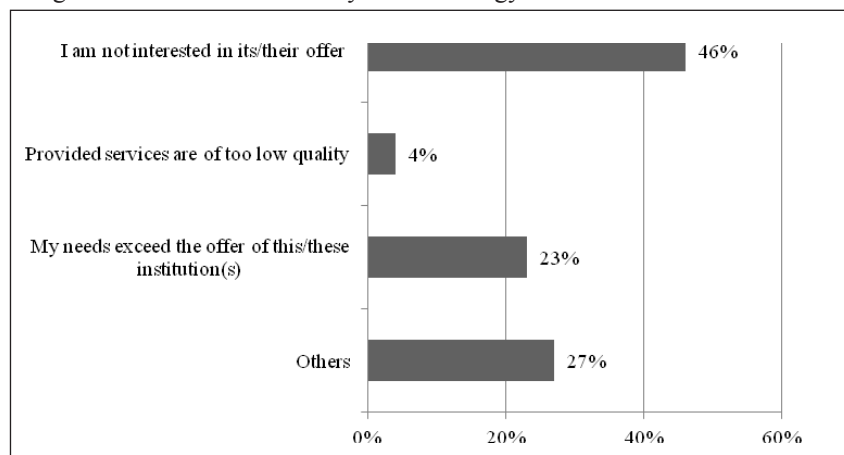
Source: own study.

The possession of the regulations for intellectual property management by state universities is an obligation resulting from the Law on Higher Education. The conducted research indicates that a significant part of the researchers do not know if the issues of intellectual property management at CUT are regulated in any way (55%), and also that 16% of the research staff have not familiarized themselves with the regulations in this field. In practice, this means that a large group (as much as 71%) of the researchers are not interested in the issues of commercialization of their own research since they showed no interest in the principles in this field existing in their parent unit (Tab. 3).

Table 3. The regulations for intellectual property management in the opinion of the research staff of Częstochowa University of Technology

Knowledge of the regulations for intellectual property management at the University	Number of indications (%)
Yes, it has been adopted and I have familiarized myself with it.	13
Yes, it has been adopted but I have not familiarized myself with it.	16
There is no need to adopt such regulations since the provisions concerning intellectual property rights are included in the employment contract.	11
Such regulations have not been adopted and this issue is not regulated in the employment contract.	5
I don't know	55

Source: own study.

Another aspect of the research confirms that the researchers are not really interested in the issues of commercialization of intellectual property generated by them. The respondents were asked about what motivates them to get involved in research and development projects which may result in development of new products, technologies, solutions. The possibility of obtaining intellectual property rights was in a low position on the list of priorities of the researchers of Częstochowa University of Technology. Only 3% of the surveyed researchers indicated this aspect. The main factors motivating the research staff to get involved in research and development were: the possibility of cooperation with other units/companies and the possibility of writing an interesting publication as well as gaining experience in the development of research and development works (Fig. 4).

Figure 4. The factors motivating the employees of Częstochowa University of Technology to get involved in R+D projects
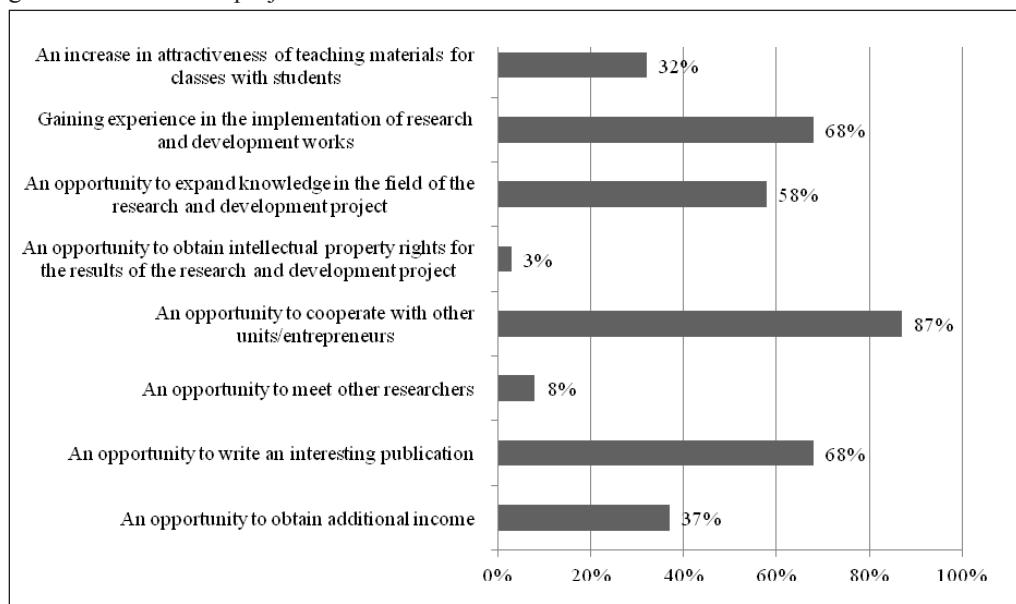
Source: own study.

The data presented above indicate that an important issue for the researchers is the cooperation with other partners, including enterprises. The research results show that 71% of the respondents, in the framework of their scientific research work, cooperate with enterprises. However, the role of the units dealing with technology transfer in the surveyed university in creating scientific consortia with the participation of entrepreneurs is relatively small. Most of the contacts with entrepreneurs are established by the researchers themselves in the course of their scientific career (52%). The ways of establishing the science-business relationships, resulting in the implementation of common research projects, are presented in detail in figure below (Fig. 5).

Figure 5. The way of forming consortia at Częstochowa University of Technology with the participation of enterprises appointed for joint implementation of R+D projects
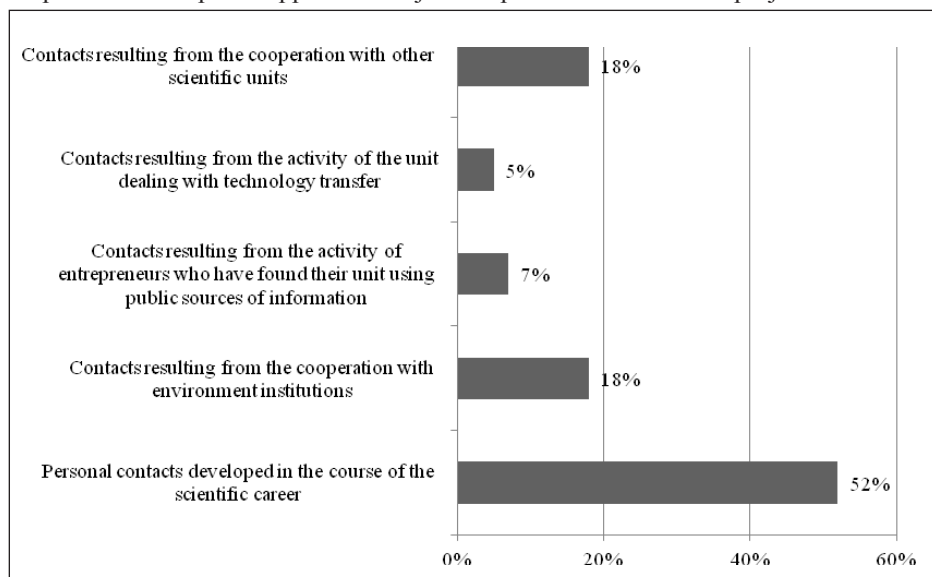
Source: own study.

Among the researchers of Częstochowa University of Technology 29% gave a negative answer to the question concerning the cooperation with enterprises in their scientific research work. The most frequently indicated reason was unwillingness of enterprises (93%) and no need due to the nature of the conducted research (5%).

The range of entrepreneurship among the researchers can be also indicated by the index of their knowledge of their coworkers who conduct their own business or are the shareholders of companies, which is shown in figure below (Fig. 6).

Figure 6. How many coworkers from your scientific unit conducting their own business or being partners in companies do you know?
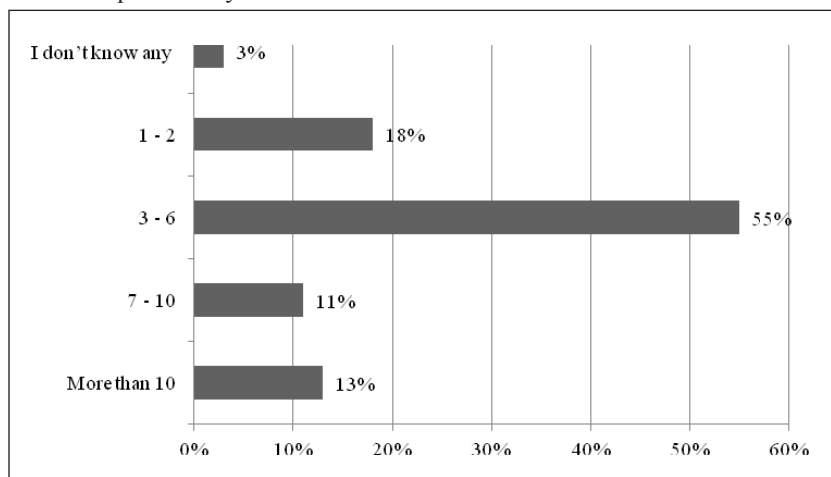
Source: own study.

A vast majority of the respondents know the coworkers who conduct their own business activity. On the basis of the responses given to another question, it can be concluded that in most of the cases it is the activity which is hardly associated with commercialization of scientific research results. Only 11% of the respondents gave a positive answer to the question referring to the knowledge of spin-offs/spin-outs which originate from the academia of Częstochowa University of Technology.

The summary of an interest of the research staff of Częstochowa University of Technology in commercialization of the scientific research is the indication of no interest in setting up a company for the practical use of the results of their scientific research work by 58% of the respondents. The following were given as the main reasons for this situation: no possibility of commercialization of scientific research results (71%), fear of failure (19%) and a lack of time (10%).

On the other hand, 5% of the respondents indicated that they already work in the company with the help of which scientific research results are commercialized but they refused to give an answer to the question concerning the details of the operation of the enterprise.

4. Conclusion

The conducted pilot study indicates that the concept of academic entrepreneurship is more often understood by the researchers of Częstochowa University of Technology in a broad context and identified with setting up companies by the members of the academia and more rarely associated with the sale/licensing of intellectual property rights. The research group was the employees conducting their research in the field of computer science and IT, Earth and environmental science, mechanical engineering, materials engineering and medical engineering, economics and business and social sciences. In terms of the application potential in enterprises the following received the highest ratings: computer science and mechanical engineering, materials engineering and medical engineering. According to the respondents, social sciences and economics and business

have the fewest possibilities and opportunities for the economic use of the results. The majority of the employees of Częstochowa University of Technology know the institution supporting the processes of commercialization at university but only a small group makes use of its services. The main reason for not using the offer of this institution is a lack of interest. Also, a vast majority of the researchers do not know if the issues of intellectual property management at CUT are regulated in any way. Since 71% of the research staff were not interested in the regulations in force in this field, it can be concluded that they are not interested in the issues of commercialization of their research. The most important reason for the involvement in R+D projects is not an opportunity to obtain intellectual property rights for the results of projects but an opportunity to cooperate with other units as well as an opportunity to write an interesting publication. Unfortunately, the discussed results of the pilot study reveal an unfavorable image of the potential of academic entrepreneurship of the surveyed University, especially because more than half of the surveyed research staff of CUT are not interested in setting up a company in order to practically apply the results of their scientific research work. A lack of possibility of commercialization of scientific research results, fear of failure and a lack of time were indicated as the most frequent reasons.

When analyzing the level of cooperation of the researchers with enterprises it turns out that the majority establish such cooperation in the framework of the conducted works. Informal relations are found to be useful in here since the majority of contacts with entrepreneurs are established by the researchers themselves in the course of their scientific career. The role of the unit dealing with technology transfer in the surveyed University in forming scientific consortia with the participation of entrepreneurs is marginal. The most important barrier to establishing the cooperation with business was unwillingness of entrepreneurs.

The pilot study allowed to verify the correctness of the formulated questions, their usefulness in relation to the problem solution and indicated the necessity to order the questions. Moreover, it confirmed the initial assumption that the research staff are hardly interested in commercialization of the results of the conducted research. The analyzed University is not an exception in this field on the map of Polish universities. This, among others, is reflected in a small number of spin-offs, the number of patents etc. However, the formulation of such strong statements requires the verification in the main research conducted on a large group of employees representing all the fields of science of CUT. Moreover, the main research will include all the stakeholders of commercialization processes, i.e. the research staff, entrepreneurs and environment institutions in order to examine the potential of academic entrepreneurship in the region of Częstochowa.

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Chapter **11**

Enabling Factors for the Development of Startups

Tindara Abbate, Patrizia Accordino, Elvira Tiziana La Rocca, Daniela Rupo

1. Introduction

Entrepreneurship is a force driving innovation, employment, social, economic and technological growth, providing new product/service concepts and responding to people's needs. Start-ups can contribute to economic growth through different ways, such as diverse innovation paths/ processes, new technologies and know-how, original resource combinations, new entrepreneurial culture and new competencies and capabilities (Malone, 2003; Wong et al., 2005). In fact, these factors are assuming a relevant role in entrepreneurship and innovation, helping to job creation, technological progress, high level of creative work, internationalization and alternative forms of employment (ESM, 2016). Start-ups have become key contributors to the region's growth due to their dynamism and their capacity to renew the local knowledge base. Consequently, the creation and development of these companies have been the focus of scientific contributions that have sought to explore and to identify the key success factors having a significant impact on their creation, survival and business performance (e.g., Gilmore et al., 2004; Schutjens & Wever, 2000; Watson et al., 1998). However, their role and contribution have been scarcely explored. To fill this gap existing in literature, the paper intends to examine the roles and the contributions of several "enabling" factors, which can differently influence the creation and development of innovative startups in a business ecosystem. More specifically, these enabling factors are the following: local strengths, inspiring entrepreneurs/previous experience, role of legislation/incentives and investor and venture capitalist support.

Focusing on these underlined factors, able to foster entrepreneurial activities and the success of innovative startups, and on the concept of business ecosystem, contemplated as huge, interconnected networks, the study provides a theoretical framework that helps policy makers when aiming to stimulate and sustain the creation, development and expansion of innovative startups and supporting new entrepreneurs in identifying which kind of factors could sustain their activities and their success.

The study is oriented to investigate innovative startups in the business ecosystem for two different reasons. Firstly, innovative startups ensure a high impact on the labor market and on the economic development, in general, and contribute to making a specific context more attractive for foreign capital, talents and capabilities, in particular. Then, in an innovative and competitive economy,

organizations do not operate in isolation, but their survival and their growth can be considered a result of interacting with each other within different networks and complex business environment (Davenport, 2006; Amaral & Figueira, 2016).

The paper is structured as follows. The next section examines the enabling factors, while the subsequent one presents the theoretical framework here developed. Lastly, the conclusions propose theoretical and managerial implications, underlining limitation and future research directions.

2. Business ecosystem and enabling factors

The concepts of business ecosystem derive from ecology, where a biological ecosystem is a complex system of organisms – physical agents of the environment where they live and develop – and relationships amongst them (Tansley, 1935). Moore (1993) creates the term "business ecosystem" and Iansiti and Levien (2004) underline that "like biological ecosystems, business ecosystems are formed by large, loosely connected networks of entities. Like species in biological ecosystems, firm interacts with each other in complex ways, and the health and performance of each firm is dependent on the health and performance of the whole. Firms and species are therefore simultaneously influenced by their internal capabilities and by their complex interactions with the rest of the ecosystem" (p. 35). Mason and Brown (2014) underline that business ecosystems is "a set of interconnected entrepreneurial actors (both potential and existing), entrepreneurial organizations (e.g. firms, venture capitalists, business angels, banks), institutions (universities, public sector agencies, financial bodies) and entrepreneurial processes (e.g. the business birth rate, numbers of high growth firms, levels of 'blockbuster entrepreneurship', number of serial entrepreneurs, degree of sellout mentality within firms and levels of entrepreneurial ambition) which formally and informally coalesce to connect, mediate and govern the performance within the local entrepreneurial environment" (p. 5). Additionally, a business ecosystem shows heterogeneous characteristics: inter-dependence of its components, cooperative evolution, existence of different players with different roles, simultaneous existence of competition and cooperation, flexibility, dynamism, shared fate, contribution to making innovations and achieving business successes (Peltoniemi, 2005; Hearn et al., 2006). Whereas the organizing principles are: interconnectedness, that involves the type of relationships established between ecosystem's actors and aims to reveal the bilateral relationships between them, through cooperation between different organizations (Iansiti & Levien, 2004); diversity, that represents the existence of business ecosystem through type of species (SMEs, governmental organizations, etc.); and complexity, a principle emerged as result of a complex and systemic analysis based on interactions between business ecosystem elements (Peltoniemi, 2005).

In this perspective, it is very important that firms explore and monitor their business ecosystem, both from a static and dynamic point of view, and analyze this ecosystem by understanding the relationships among different actors (Miller & Bound, 2011; Roper & Hart, 2013; Autio et al., 2014). As a result, the dynamics of different factors can potentially positively and/or negatively impact their businesses and their outcomes.

2.1. Educational Institutions

Developing and promoting entrepreneurship education paths has been one of the key policy objectives for the EU and Member States. There is an increasing awareness of the potential of young people to create, launch and develop their own commercial or social ventures, contributing to increase creative and innovative processes in the territory in which they live and work. Entrepreneurship education is essential not only to shape the mind-sets of young people but also to provide the skills, attitudes, knowledge and competences that are critical and necessary for developing an entrepreneurial culture (Eurydice Report, 2014). In this respect, different organizations have underlined that "entrepreneurship education is about learners developing the skills and mind-set to be able to urn creative ideas into entrepreneurial action. This is a key competence for all learners, supporting personal development, active citizenship, social inclusion and employability. It is relevant across the lifelong learning process, in all disciplines of learning and to all forms of education and training (formal, non-formal and informal) which contribute to an entrepreneurial spirit or behavior, with or without a commercial objective" (ETF, GIZ, ILO, UNESCO and UNEVOC, 2012).

Universities, research centers and educational institution possess the abilities to enable the initiation and promotion of the venture creation process, assuming a relevant role during the early development stages of startups. In fact, they build capabilities and provide a miscellaneous range of resources, such as infrastructures and useful platforms, mentoring and educational support that foster the development of young entrepreneurs and nascent startups. In particular, universities are a rich source of skilled people, attracting and/or possessing a large pool of diverse, talented and smarted people, as well as a source of innovative technological opportunities, with basic research being conducted in these institutions (Siegel & Wessner, 2012). Additionally, universities and their advisory and mentoring organizations, incubators, accelerators, co-working spaces, startup competitions are organizations and activities focused on specific parts of the ecosystem function and/or startups at their specific development stage(s). These organizations' objectives are to provide entrepreneurs with a number of resources/services in order to accelerate the growth and success of companies, to increase the odds of survival, therefore de-risking the entrepreneurial venture (Clarysse et al., 2005; Hoffman & Radojevich-Kelley, 2012).

2.2. The inspiring entrepreneurs/previous experience

A huge economic and management literature have been investigating, in the last decades, the role and nature of human capital, within intellectual capital, as a key driver of value creation of the enterprise. The value of this "asset" to organization, as argued by Stewart, (1997, p. 83) is so evident that *doesn't need to be proved*.

Most of the studies on this topic have focused the relevance of such intangible factor considering all the people employed in the company, emphasizing the importance to manage this workforce and build value from human capital so that tacit knowledge of workers can become explicit knowledge, under the domain of the company. The basic idea is that the company's human capital resides in its skilled people, high value added and difficult to replace (Stewart, p. 85). The contribution given by human resources has a central role for the competitive advantage of the firm, allowing to better satisfying the customers' needs and supporting innovation and growth.

The key elements of human capital, the "soul of the company" (Roos et al., 1997, pp. 34-37) are:

- *abilities*, or *competence*, whose main components are knowledge (both technical and academic knowledge, education that anyway have to be taught) and skills (ability to do an activity in practice, that can be increased through learning by doing or trial-and- error methods);
- *attitudes*, primarily influenced by motivation, behaviour and conduct of individuals;
- *intellectual agility*, the ability to use competence and applying it in practice, thanks to individual attributes: capability of trying something totally new (innovation), or to look around, perceive innovation outside and apply to one's own situation (imitation), the ability to adapt a known solution to a different context (adaptation), or to turn an idea into product/service (packaging).

The role of the above considered dimensions of "human capital" in building up new ventures is crucial especially considering the figure of the entrepreneur – meaning for entrepreneur, for the purposes of this analysis, business owners, founders, or part of a founding group – given his propulsive role in the start-up phase of a business.

Among the relevant entrepreneur human capital inputs, some theoretical and empirical studies have investigated the relevance of entrepreneur's previous experience or attitudes, and of other conditions related to individual traits, such as the attitude to be inspired, creative and to have a vision of the specific business. Personal attitudes of entrepreneurs are gaining consideration in training and education, having the recent story of the economy shown that the success of a firm is strongly related to "soft" characteristics, which differentiates the entrepreneur's mind-set and personality (Morris & Liguori, 2016). Among these features, the propensity to problem-solving activities, the willingness to take risks, the industry experience (Groenewegen & de Langen, 2012). More specifically, entrepreneur's previous experience is considered an enabling factor in start-ups:

- for internationalization of SME (Matiusinaite & Sekliuckiene, 2015): companies having limited amount of resources can recognize opportunities in foreign markets faster. The value of the entrepreneur's network, thanks to existing contacts, aids the knowledge of the target market and internationalizes activities much earlier, assuring better results of expansion to foreign markets;
- for attracting funds in form of equity or debts: start-ups with more physical assets are more likely than others to have financial debt, whereas start-ups with higher human capital embodied in the entrepreneur, or more intellectual property assets, have a lower probability of using debt, consistent with the higher asset specificity and lower collateral value of these assets; on the other hand, older and more educated entrepreneurs are more likely to use debt financing (Sanyal & Mann, 2010);
- for longevity and growth of the business (especially for small businesses) (Bates, 1990; Mengistae, 2006): empirical researches seem to confirm that the probability of business survival increases with the number of years of schooling and the number of years of business experience of the entrepreneur as does the expected growth rate, conditional on survival.

As pointed out by Bann, the entrepreneurial experience is a *complex phenomenon that includes both emotional and rational elements*. The lived experience of the entrepreneur is significant and results in personal growth, enhanced awareness, and in increase in self-confidence (Bann, 2009, p. 79). Prior knowledge helps entrepreneurs to better recognize opportunities and to develop the ability to exploit them. Therefore, new firms benefit from knowledge that was accumulated by the founders throughout their careers. In this regard, it is worth mentioning that, according to what emerged from an empirical research, founders' previous experience can affect differently the survival of the firm depending on the motivation underlying the choice to become entrepreneur: if entrepreneurs were unemployed prior to start-up (starting a firm as an escape from unemployment), previous entrepreneurial experience seems to increase significantly the probability

of early survival of the firm; if entrepreneurs were employed prior to start-up (firms more likely to be driven by opportunity discovery) both general and specific forms of entrepreneurial human capital contribute to increasing the probability of the firm's survival (Baptista et al., 2014, p. 845).

2.3. The role of legislation and incentives

By examining the choices of countries that, recently, have put more effort into creating the right conditions for development and flourish of innovative enterprises, it is clear that the most profitable and correct policies are those which promote the implementation of understandable rules, simplification and variety of exploitable legal forms, focus on financing methods, fiscal policies that ensure taxation competitiveness (Lindholm-Dahlstrand & Stevenson, 2010; Elert et al., 2017).

European Union Commission has undertaken many policies, such as the Capital Markets Union[1], the Single Market Strategy[2], and the Digital Single Market[3] to favour the development of the innovative startups. Moreover, directives and regulations have a specific impact on innovation. Nevertheless, the Commission finds that there is no need of a common legislation for the Member States, to enforce the growth of innovative startups: it is important to remove obstacles that hamper their development. Among these, the creation of a common corporate tax base[4]. According to this, Member States are free to establish the necessary rules in order to taking into account different needs. However, too stiff legislation can represent a limit.

It is essential to pay close attention to new rules on innovative entrepreneurship, especially in the field of taxation. Indeed, there is the risk of incurring in European Union State aid rules, about which, the European Court of Justice is strictly vigilant (Boria, 2015; Dorigo, 2016). This means that incentives must be granted in compliance with article 107, first paragraph of the Treaty on the Functioning of the European Union, which provides that "any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the internal market".

Nevertheless, tax incentives play a fundamental role and they should be provided for investors as tax deductions or finding other similar way to reduce the tax burden, and for the innovative startups, as a reduced tax rate (Bagarotto, 2015).

It is quite intuitive that this kind of provision contributes to ensuring adequate capitalization of the innovative startups, favouring its growth, which is largely dependent on increased equity. The latter is fundamental for the long-term investment needed for the implementation of the innovation programs, for the strengthening of the production system and, ultimately, for the economic

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[1] In September 2015 the European Commission adopted an action plan setting out a list of over 30 actions and related measures to establish the building blocks of an integrated capital market in the EU by 2019.

[2] On 28 October 2015 the European Commission published its Single Market Strategy, a plan to unlock the full potential of the Single Market.

[3] On 6 May 2015, the European Commission announced the Digital Single Market (DSM) strategy. The scope of the DSM strategy covers a wide range of areas including cross border e-commerce, ICT standards and interoperability, reform of the copyright, audio visual and communications legal frameworks, competition and VAT, parcel delivery and collaborative economy.

[4] The idea to harmonize corporate taxation in the EU dates back to the early 1980's. Nevertheless, in the last thirty years there were some unsuccessful proposals. On October 25, 2016 The EU Commission proposed a package of major corporate tax reforms including a directive implementing a Common Consolidated Corporate Tax Base.

development of the country. It has obviously been argued that financial leverage may encourage investors to prefer equity over debt (which – in general – ensures a better remuneration) while facilitating the growing process of the innovative entrepreneurship (Piantavigna, 2014).

For these reasons, in the last five years Italy, the United Kingdom and France, in particular among others, have introduced specific rules on innovative startups[5] with the extent of assuring to the new entrepreneurship clear rules and benefits that sometimes go beyond the simple scheme of tax incentives and contribute to help the development of the innovative startups. For example, the Italian legislator has set a rule that should be taken into account also by other countries: the "work for equity" consisting in the opportunity to remunerate the employees, as well as external service providers, by means of equity participation instruments.

This solution, in addition to providing a benefit on labor income taxation for those who believe in new enterprises, can create a loyalty encouraging the development of the new entrepreneurship.

2.4. Investors and venture capitalist support

New entrepreneurial ventures are, often, resource constrained and rely on external investors to take advantage of business opportunities. Business Angels (BAs) and Venture Capital (VC) investments play a crucial role to support growth-oriented startups in their evolution providing crucial resources (Lerner, 1995; Wright & Lockett, 2003; Wilson, 2011; Alexy et al., 2012, Wright et al., 2016). BAs are individuals, often experienced entrepreneurs, investing their funds into a startup, usually in seed and early stage ventures (Wright et al., 2015). In recent years, BAs' role has strengthened (Wilson, 2011; Wright et al., 2015). Venture Capitalists (VCs) typically invest in early to expansion stages. BAs and VCs impact on innovative startups in several ways. They are actively involved in monitoring the funded companies and in providing critical resources such as expertise and network of contacts (Gorman & Sahlman, 1989; Baum & Silverman, 2004; Hsu, 2004). First of all, they give financial capital to new ventures, funding their growth (De Clercq et al., 2006). In addition, these investors contributes to the startups success by supporting strategic, organizational and management skills (human capital) needed to grow the business and increase market competitiveness (Dimov & Shepherd, 2005). For instance, providing strategic advice and planning support, taking a governance role on a board of directors (Lerner, 1995). Even more important, VCs give access to their network (social capital), the network of relationships with the financial and productive world that is useful for the success of entrepreneurial activity (De Clercq et al., 2006; Dimov & Shepherd, 2005; Pratch, 2005). BAs and VCs provide value added services to their funded ventures in the evolution toward a profitable exit. Compared to the classical shareholding, BAs and VCs are temporary partners, they aim to sell their stake in the medium term, to liquidate their investment expecting a high rate of return at high risk. IPO is the most preferred exit-way (Black & Gilson, 1998; Smith, 2005). For the funded ventures, IPO represents a good vehicle to raise additional capital for continued growth.

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[5]   In Italy, Decree-Law 179/2012 on *Further urgent measures for Italy's economic growth*, converted into Law 221/2012. Decree-Law 3/2015, known as *Investment Compact*, turned into Law 33/2015). *Loi pour la croissante, l'activitè et l'egalitè des chances economiques*. 2015-990 – 6 August, 2015. Launched by the government back in April 2012, the UK *SEIS programme* is designed to incentivise investment in early-stage companies by offering tax efficient benefits to investors – in turn boosting economic growth by promoting enterprise and entrepreneurship.

Recently, the entrepreneurial finance landscape is experiencing profound changes (Wright et al., 2016). Various types of VC firms are operating: private VC firms, corporate VC firms, bank-affiliated VC firms, and non-bank financial institution-affiliated VC firms. Rather than seeking funds from a single type of VC firms, some entrepreneurial ventures receive financing simultaneously from multiple types of VC firms (Zhang et al., 2016). The global financial crisis has increased the firms' difficulties to get new capital (Wilson & Silva, 2013) and has stimulated the development of forms of financing for entrepreneurial ventures (Wright et al., 2016). For instance, new financial forms of quasi debt and equity, various forms of crowdfunding, venture debt and informal funding. New and traditional forms may be substitutes or complementary including coinvestment among different forms (Wright et al., 2016; Zhang et al., 2016).

3. Theoretical framework

This paper develops a theoretical framework to identify the role and the contribution of several elements, which influence economic growth and development of innovative startups in a business ecosystem. It is a matter of fact that an entrepreneurial ecosystem generally emerges in strategic locations (Mason & Brown, 2014). Its development is generally influenced by many elements. Thus, the study illustrates the ones which in literature are considered the most important:

1. presence in a territory of large established businesses, undertaking, research and development and production activities;
2. policy implications (e.g. role of the Government and of the other social actors): the public authorities have a key role in promoting economic development through an appropriate industrial policy;
3. environment where consumers have a willingness to enjoy innovative products and services;
4. access to knowledge and information. This means access to the forefront of academic research and even to the original sources. Moreover, it implies access to information by simplification and clear administrative processes;
5. solid infrastructures, such as transport, logistics and communication;
6. cooperation between universities, institutions and business actors;
7. availability of finance, which means that local investors may have connections with national and international venture capital funds.

The comparison between the different choices of some European Governments in order to improve the development of a business ecosystem shows that, in the last years, there are *four key factors* influencing growth and strengthening of innovative startups (Fig. 1):

1. Increase specific knowledge and skills in the areas of innovation and entrepreneurship, e.g. digital and information technologies (Educational institutions);
2. Reduce the overall tax burden on citizens and enterprise who choose to invest in startups by introducing tax incentives and act, with the same extent, also on the startups (Legislation and incentives);
3. Draw on previous experience of entrepreneurs and enforcing the personal attitude to management and leadership, in the awareness that practical ability and physiological traits (such as motivation, vision, problem solving agility) and other "soft" competencies are as important as theoretical and technical knowledge (Inspiring/previous experience of entrepreneurs);

4. Make market access easier for innovative startups, promoting alternative financing methods, as crowdfunding (Investors and ventures).

Because of their joint operation, all these factors may multiply the effects and this could explain the creation of a strong and solid business ecosystem.

In the last ten years, the level of entrepreneurship was strongly exacerbated by the financial and economic crisis. Nevertheless, Member States with higher levels of entrepreneurship are, often, less successful than others at helping new enterprises to grow, neglecting to take into account their characteristics.

By checking all these elements, this study confirms that the challenge is a cultural change and a new view that recognizes innovative startups as model which can create jobs and income.

Such result is, now, confirmed by the European Union that, recently (COM 2016 733 final), has faced the need of a strategy to create opportunities for consumers and businesses and help startups to grow.

Indeed, it consists in a *Startup and Scale up initiative* which main proposals, besides removing barriers for startups to scale up in the Single Market, are:
- to create better opportunities for partnership, commercial opportunities and skills,
- to introduce taxation simplifications,
- to foster ecosystems where startups can connect with potential partners such as investors, business partners, universities and research centers,
- to facilitate the access to finance.

Figure 1. Startup Business Ecosystem
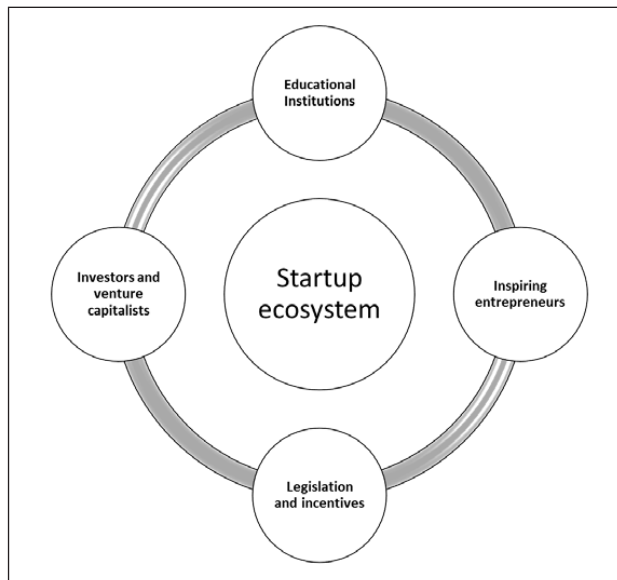
Source: our elaboration.

4. Conclusion

As a result, this paper contributes to the literature on the topic of different implications in creating and developing new innovative enterprises.

Considering that several "enabling" factors could influence the creation and development of innovative startups in a business ecosystem, this paper provides a theoretical framework to help policy makers and new entrepreneurs in the creation, development and expansion of innovative startups. Four key factors could affect growth and strengthening of innovative startups and could explain the creation of a strong and solid business ecosystem: educational institutions, role of legislation and incentives, inspiring/previous experience of entrepreneurs, investors and venture capitalists support. The main challenge is a cultural change and a new view that recognizes innovative startups as a model that can create jobs and income. The recent European Union *Startup and Scale up initiative* has faced the need of a strategy to create opportunities for consumers and businesses and help startups to grow.

Several implications arise from this study. Theoretical ones are related to the concepts of innovative startups and of business ecosystem, contributing to the better understanding of the synergies among some enabling factors that assume a relevant role in the creation and development of these companies. Practical implications are related to managerial and political issues. About managerial implications, we suggest that innovative startups have to consider and monitor their business ecosystems and the dynamics of these factors in order to define and implement efficacious strategies. The main political implications are linked to necessity of new approach/activities/incentives to stimulate and support the creation of new companies in order to be aware and to respond effectively to their needs.

The limitation of the paper is in its theoretical approach, which requires empirical validation and a more in-depth study of the enabling factors and their concrete contribution. Therefore, future research could consider case study methods and quantitative analysis with the aim to examine the impact of these enabling factors on the performance of the innovative startups.

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Chapter **12**

Fostering Micro-Entrepreneurship: Does Spatial Proximity Matter?

Maria Cristina Cinici, Mohamed Amara, Daniela Baglieri

1. Introduction

What are the determinants of micro-entrepreneurship in the countries of the MENA (Middle East and North Africa) region? And in particular: Does spatial proximity matters? Positioned at the cross section between micro-entrepreneurship (Chelekis & Mudambi, 2010; DeBerry-Spence & Elliot, 2012) and social movements (Beinin & Vairel, 2013), this paper adds to both literatures by detailing local conditions that correlate with entry rates of small firms. In so doing, it engages in the debate of how policymakers should cope with unemployment in the countries of the MENA region where the business environment has traditionally been plagued with corruption and many other imperfections and uncertainties, and not conducive for substantial investment and enterprise creation. Many academics, policy makers, and business leaders have stressed the importance of local conditions for explaining spatial differences in entrepreneurship and economic development (e.g., Saxenian, 1994; Acs & Armington, 2006). This paper characterizes these entry rates more precisely by focusing on a specific country of the Mena region, Tunisia, and linking its effect on micro-entrepreneurship and job growth.

We focus on Tunisia because this country has recently striven to gain social sustainability. Giving rise to the Arab Spring social movement, Tunisia has gone through a seismic political shock that led to the collapse of its previous autocratic regime and to the beginning of the transition to democracy. The demands for decent jobs, justice and a better and more inclusive government drove the frustrated and angry youth to be the main driving force of this historic transformation. Youth employment remains the biggest challenge for the country and creating opportunities and employment for youth is a crucial condition for a successful transition to democracy. Actually, the unemployment problem is not new and it has no easy solution. In Tunisia, unemployment has been persistent because the economy has not been creating sufficient jobs for the rapidly growing number of young people joining the working force every year. The problem has been made more difficult by the fact that educated youth expect good jobs and are not satisfied with the low-productivity, low-wage jobs offered by the private informal sector that are easier to find.

The rebellious unemployed youth expect the government to respond to their legitimate demands and to offer them a more sustainable environment.

2. Literature background and theoretic framework

Social sustainability gained formal and international repute following the World Commission on Environment and Development report to the United Nations, which stipulated that sustainable development required concerted attention to social, ecological, and economic conditions (World Commission on Environment and Development, 1987). Social sustainability is the least developed of the three constructs of the Triple Bottom Line (Clarke, 2001) and often is posited in relation to ecological or economic sustainability (McKenzie, 2004). Human well-being, equity, democratic governments, and democratic civil society are intended as primary constituents of social sustainability (Magis & Shinn, 2009). This paper focuses on an important dimension of social sustainability, i.e., the employment, which is strongly related to all its constituents. In particular, we dig deeper in the relationships between micro-entrepreneurship and job growth and regional characteristics.

In the literature dealing with entrepreneurship and job growth, scholars argue that the best way to create opportunities is through the development of a more open private sector focusing on small firms (Glaser & Kerr, 2010). They argue that small firms not only enhance competition and entrepreneurship because they are easier to establish than large enterprises, but that they are also more productive and can boost employment and alleviate poverty more effectively than larger firms because they are presumably more labor intensive (Glaser et al., 2010). They also argue that small firms can create better quality and more stable jobs (Mandelman & Montes-Rojas, 2009). We infer that this is especially true in the Tunisian case where the economy is predominantly private. Although some of the largest and most important enterprises of the country remain state owned, the size of the public sector — including the state-owned enterprises and the government — has been rather modest and stable for the last decade. The share of employment in the public sector was 22 percent in 2011 and GDP was around 25 percent. The public sector's role is still quite dominant in three specific sectors: energy and utilities (100 percent of total employment), banking and mining, and, significant but less important, community services and communications. Agriculture, manufacturing, construction and trade are all predominately private as well as business services, transport and communications, and tourism. These are mostly small and micro enterprises and family-owned firms that emerged in the 1970s.

3. Methodology

3.1. Empirical setting

In Tunisia, unemployment has been persistently high for more than two decades preceding the 2010 Arab Spring revolution and afterwards. It was often above 14 percent until 2010, and between January 2011 and May 2012, about 200,000 additional jobs were lost and the unemployment rate reached 19 percent. Youth, between 15 and 30 years old, make about one-third of the labor force and three-quarters of the unemployed. On average but with important disparities, their unemployment rate is above 30 percent. This rate is higher for young women and in poorer regions, especially in the west of the country. There is a wide consensus that angry unemployed youth, in a context

of regional disparity and increasing corruption and poverty, triggered the popular revolts and led to the fall of the previous dictatorial regime in Tunisia (as in the other Arab Spring countries).

Table 1. The unemployment rate in Tunisia

	1995	**2000**	**2010**	**May 2011**	**May 2012***
Unemployment size (in 1000)	440	480	491	720	750
Unemployment rate	15.7	15.6	13	18.3	19

Source: INS Labor survey 2011; * May 2012 is an estimate.

This structural unemployment is the outcome of both supply and demand effects, including the inefficient functioning of the labor market. On the supply side, the demographic pressure is high due to the rapidly increasing size of the labor force, which is expected to continue to increase for the coming decade mainly as a result of increasing female participation in the labor market, in spite of the slowing population growth.

Table 2. Labor Force Growth

	2005	**2007**	**2009**	**2011**	**2012***
Size (in 1000)	3,359.1	3,521.7	3,689.2	3,844.6	3,940
Growth rate		2.53	2.36	2	2.4

Source: INS Labor survey 2012; * May 2012 is an estimate.

Moreover, the Tunisian labor force is increasingly educated; the number of university graduates has been rising rapidly thanks to the open and free access to higher education. The proportion of the labor force with university degrees was less than 10 percent in 2000, but reached 13.1 percent in 2005 and more than 16 percent in 2010, and it keeps growing. The proportion of those with secondary or vocational education in the labor force is also high – above 37 percent – meaning the total educated labor force is above 53%.

Table 3. The Structure of the Labor Force by Education Level, 1966 to 2011 (Percent of Labor Force)

	1966	**1975**	**1984**	**2001**	**2006**	**2006**	**2011**
Higher	1.2	1.4	3.3	7	10	15	17
Intermediate (High School & Vocational)	7.1	12.8	20	29	30	31	38
Low (Primary or None)	91.7	85.7	76.8	64	60	54	45
Total	100	100	100	100	100	100	100

Source: INS Labor survey 2012; * May 2012 is an estimate.

On the demand side, the economy's capacity to create jobs, especially good jobs, and attractive opportunities has been weak, well below the expectations of job seekers, especially youth. Economic growth has not been adequate, and the demand for skilled and educated labor is limited. Investment has been predominately concentrated in low value-added, low-wage, labor-intensive activities based on low-level technologies. Consequently, the demand for more educated, less-

experienced youth is the lowest in the labor pool. The demand is even lower for women and for those living in the poorer hinterland region located mainly in the Western regions of the country. These regions are poorer in terms of infrastructure, access to international harbors and ports, and human capital availability. Hence, they were the least attractive for investments and entrepreneurial opportunities and have the least diversified productive activities.

3.2. Data collection

Data are drawn from the Banque Tunisienne de la Solidarité (the Tunisian Solidarity Bank – BTS Bank henceforth). The STB Bank, set up in December 1997, is a government-sponsored microfinance wholesaler providing cheap loan funds to eligible microfinance associations with a maximum annual interest rate of 5%. Men and women in both urban and rural areas are eligible to apply for a loan with a flexible grace period of 3 to 12 months before repayment begins. Reimbursement of the loan can be over a period of 18 months to 7 years. Our sample covers 49,745 loans during the period 2007-2011, which 13,073 (26%) of them are extensions of existing projects, and who are not considered as start-ups in our analysis. We also excluded new firm with more than 20 employees, giving that real start-ups tend to be small (Bônte et al., 2009). The final sample considered includes 36,613 new start-ups. The BTS Bank dataset provided information on start-ups' location (24 governorates and 264 delegations). Hence, our study takes the number of start-ups aggregated in regional units (delegation) as the basic units for analysis. In order to assess the impact of regional conditions on the would-be entrepreneur, we use the 2004 general Census of the Tunisian population which gives us the characteristic of each delegation in terms of population, employment, unemployment, education, and so on so forth. We also use the 2005 National survey of household consumption with 12,318 Households. The detailed information on the 2005 survey allows estimation of poverty rate by delegation, which the Census cannot provide such information. The lag between the two datasets (2007-2011 for the start-ups dataset and 2004-2005 for the delegation environment) allows us to overcome the problem of simultaneity.

3.3. Data analysis: The Spatial Econometric Models

In our empirical analysis, we used in the first step a count data model (Poisson model or negative binomial model) in order to estimate the following equation (Bônte et al., 2009):

$$E\left(start-ups_r|population_r; age\, structure_r; controls_r\right) =$$

$$\lambda_r = \exp\left(\alpha_r + \beta_1 population_r + \beta_2 age\, structure_r + \beta_3 controls_r\right) \tag{1}$$

As control variables, we used unemployment rate, poverty rate, education level and urbanization rate. We extended this model to consider explicitly the peer effects approximated by the delegation migration ratio using the following equation.

Delegation migration ratio = (number of governorate migrants – number of delegation migrants)/(Governorate population – delegation population) (2)

This definition is close to the one used by Chen et al., (2008) and Zhao (2003) to measure the network effects of migration.

In the second step, we used spatial econometric models to consider inter-delegation peer effects. Indeed, two main problems can occur when using classical methods to deal with geographical data. First, most area data show some spatial dependence, making the classical methods inappropriate. Second, it is difficult to assume stationarity in any process operating over real geographical spaces. Despite their strong presence in the spatial analysis, classical methods have almost always ignored these problems (Anselin, 1988). Spatial econometric models come in three basic varieties, the spatial autoregressive model (SAR), the spatial error model (SEM), and the spatial Durbin model (SDM). The SAR model supposes that the dependent variable (log of total number of start-ups per delegation) can be correlated with the mean value of start-ups in contiguous delegations.

$$y = \rho W y + X \beta + \varepsilon \tag{3}$$

where y is the log of the number of start-ups by delegation, X is a matrix of independent variables (age cohort, log of population density, headcount, unemployment rate, education level). W is a spatial matrix, whose $(i, j)^{th}$ element, denoted w_{ij}, is equal to one when delegations i and j are contiguous of order 1 and zero otherwise. Rho is the spatial autoregressive parameter. The SEM model is presented as follow:

$$y = X \beta + \varepsilon, \ \varepsilon = \lambda W \varepsilon + \mu \tag{4}$$

Lambda is a spatial autoregressive parameter to be estimated. The spatial autocorrelation in the SEM model can arise because nearby locations have unobserved common factors. In addition to spatial interaction in the dependent variable, the SDM model supposes that independent variables can also present a spatial interaction process. The SDM model takes the following form:

$$y = \rho W y + X \beta + \delta W X + \varepsilon \tag{5}$$

4. Discussion

Table 4 presents the estimation results of the negative Binomial Model, SEM model and SDM model. The results of the negative binomial model show that the total number of start-ups per delegation is positively affected by the 20-29 and 40-49 age cohorts, the strongest effect is observed for the 40-49 age cohorts. The poorest delegations present the great number of start-ups. In addition people with secondary education attainment are more likely to build their own project. These results still unchanged between genders. However, we can see that the effects of control variables change if we consider the sector of the start-ups. The log of population density has a negative effect on the number of start-ups in the agriculture sector, while this effect is positive and significant for craft and service sectors. The estimation results (the spatial autoregressive model (SAR) is not presented here because the spatial autoregressive model is not significant, and it will presented at the final version of the paper) show that the number of start-ups by delegation does not present a significant spatial correlation over space. Figure 1 shows the same thing as the estimation results that there is no spatial clustering of the number of start-ups per delegations. In fact, unlike

the ENDA, where the granting of loan is based primarily on the social network and trust between the reference group of people in the same village, the BTS Bank does not considers this strategy. However, the spatial autoregressive parameter (lambda) in the SEM model is positive and significant and shows the existence of unobserved correlated common factors between delegations that can affect the total number of start-ups. SDM model show an interesting results. The mean poverty rate (W*headcount variable in Tab. 1) of surrounding delegations has a positive effect on the log of total number of start-up.

Figure 1. Spatial Distribution of Start-ups per delegations

Source: own work.

Table 4. Estimation results: Negative binomial model, Spatial Error Model and Spatial Durbin Model

	Negative Binomial regression			Negative Binomial regression				Spatial Error Model			Spatial Durbin Model		
	Total Start-ups	Men Start-ups	Women Start-ups	Agriculture Start-ups	Craft Start-ups	small business	Services Start-ups	Total Start-ups	Men Start-ups	Women Start-ups	Total Start-ups	Men Start-ups	Women Start-ups
log of population density	0.031	0.035	0.016	-0.412***	0.198***	0.062	0.072*	0.039	0.049	-0.007	0.119**	0.121**	0.086
20-29 years	0.082***	0.083***	0.078***	0.092**	0.010	0.077***	0.066**	0.087***	0.083***	0.111***	0.087***	0.081***	0.115***
30-39 years	0.032	0.034	0.032	0.031	-0.037	-0.015	0.068	0.046	0.057	0.022	0.073	0.069	0.080
40-49 years	0.189***	0.188***	0.197***	0.189	0.194***	0.216***	0.197***	0.181***	0.167***	0.217***	0.115*	0.093	0.159***
50-59 years	-0.171***	-0.170***	-0.172***	0.150	-0.398***	-0.246***	-0.258***	-0.156***	-0.159***	-0.125*	-0.122	-0.139*	-0.075
primary	-0.040***	-0.041***	-0.038***	-0.050*	-0.013	-0.007	-0.035***	-0.039***	-0.036**	-0.052***	-0.003	-0.000	-0.005
secondary	0.054***	0.047***	0.075***	-0.016	0.076***	0.062***	0.082***	0.045***	0.041***	0.067***	0.052***	0.049***	0.083***
university	0.003	-0.003	0.011	-0.054	0.026	0.005	0.022	-0.001	-0.003	-0.012	0.030	0.027	0.035
Headcount	0.036***	0.035***	0.040***	0.055***	0.068***	0.016	0.043***	0.032***	0.033***	0.025**	0.006	0.004	0.014
unemployment rate	0.001	0.002	-0.001	0.012	-0.0241	-0.004	0.002	0.000	0.004	-0.012	-0.004	-0.001	-0.012
peer effects	-0.009	0.245	-0.633	-1.273	-0.021	0.001	-0.310						
constant	0.919	0.762	-0.953	1.195	-1.544	-0.635	-0.946	0.677	0.332	-1.048	0.278	-0.346	-0.259
W*log of population density											-0.085	-0.087	-0.065
W*20-29 years											0.102*	0.097*	0.1345**
W*30-39 years											-0.186*	-0.168	-0.215*
W*40-49 years											0.245**	0.263**	0.167
W*50-59 years											-0.072	-0.058	-0.082
W*primary											-0.048*	-0.044	-0.073**
W*secondary											-0.033	-0.034	-0.049*
W*university											-0.063*	-0.055	-0.100**
W*headcount											0.032*	0.037*	0.003
W*unemployment rate											-0.009	-0.008	-0.007
lambda								0.164*	0.203**	0.151			
Rho											0.114	0.151*	0.095
Wald test: lambda=0								2.902*	4.663**	2.227			
Likelihood ratio test of lambda=0								2.842*	4.515**	2.194			
Wald test of rho=0											1.650	2.995*	1.137
Wald test for coefficients on lags of X's =0											37.058***	33.486***	41.882***
Likelihood ratio test of SDM vs. OLS											1.621	2.913	1.121

***significantat 1%; ** significant at 5%; * significant at 10%.

Source: own work.

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Chapter **13**

The Efficiency of Healthcare Policy: Empirical Evidence from Poland and The Republic of Serbia

Ana Krstić, Nemanja Lojanica

1. Introduction

Health care, as a part of human capital is an important factor for economic growth. One of the main objective, both in developed and in developing countries, is to achieve the highest possible standards in all aspects of health care. In that sense, the effective investment in the healthcare system should provide a higher level of gross domestic product. Additionally, the positive impact can be reflected in the life expectancy, as well. Thus, the main goal of this paper is primarily oriented towards testing the efficiency of investment in the healthcare system. In doing so, a preliminary analysis was carried out, with the particular focus on the economies of the Republic of Serbia and of Poland. Observed time range of variables is limited to a period of 15 years, between 2000 and 2014. In the empirical literature, specific techniques used for testing the efficiency, were found. Bearing in mind that the paper has primarily methodological character, as the appropriate framework, one of the methods of linear programming was applied. Specifically, we used Data Envelopment Analysis, which is defined as the ratio of the weighted sum of inputs and outputs.

The paper is organized as follows. The first part refers to the literature overview concerning the importance of the health care from the macro aspect, as well as the relation between DEA method and health care. The second part presents the methodology of the Data Envelopment Analysis. The third part provides the description and structure of the issue itself, after which the corresponding DEA method was applied. Furthermore, overview of the results and their interpretation will be presented. Finally, the conclusion with appropriate guidelines will be given.

2. Literature review

From macroeconomic point of view, it can be said that health care is in the function of economic growth, and that higher output means more money, which among other things means greater investment in health care (Fuchs, 1996). On the other hand, health care as a part of human capital can be seen as the engine of growth (Lucas, 1988), since the investment in health care involves investment in human capital, which provides workers with better health, higher productivity,

and ultimately, a higher level of output (Barro, 1991). These statements about potential relations between health and economic growth are clearly related to a positive relationship between these two variables. Conversely, it is important to point out the research conducted by Acemoglu and Johnson (2006), which showed that the increase in the life expectancy leads rather to a larger increase in the total population than in economic growth, which ultimately reduces output per capita. So, here we have a negative relation between the variables. The above mentioned theoretical attitudes found their place in the empirical studies, too, on the basis of which it is possible to distinguish four key types of causal relations between health expenditure and economic growth: Growth hypothesis implies unidirectional causality from health expenditure to economic growth. This direction of causality also calls the "health view". Growth detriment implies unidirectional causality from economic growth to health expenditure. This direction of causality can be called the "income view". With this result, economic growth is a key determinant of growth in health expenditure. Feedback hypothesis implies a two-way causality between health expenditure and economic growth. The increased investment in health expenditure leads to creating a healthier environment, increased productivity and higher output. On the other hand, a higher level of output will involve higher demand for health care system. Neutrality hypothesis implies the absence of a causal relation between these two variables. Newhouse (1977) gives the explanation of this result, noting that in this case, the formation of the appropriate health care policy should not depend on the economic activity.

It is evident that in the empirical studies that have examined the relation between health variables and economic growth, ambiguity of the results exists, that is, the results are not consistent. The reason should be sought in the fact that during the study of the connection between the variables several approaches were used while modeling this connection. Gerdtham and Lothgren (2000) distinguish the following econometric approaches, which are also most commonly used: a cross-section bivariate regressions, cross-sectional multivariate regressions, panel data models and cross-sectional regression and unit root and cointegration analysis. With the implementation of the appropriate economic policy, it is important to calculate the income elasticity for health care as well. This is very important for the financing model itself as well as for the health care resource distribution. Proponents of the idea that health care is a luxury good feel that it should be treated like any other good and should be left to the functioning of market forces. On the other hand, proponents of the idea that this good is necessary for life, support the idea of the government intervention in the healthcare sector of a country (Di Matteo, 2003). In previous studies, as well as in the case of establishing causality between variables, there is no agreement between the authors whether the health care is a luxury or a necessity good (Baltagi & Moscone, 2010).

Taking into account that the primary aim of this study is to examine efficiency of health care policy, we want to point out some research papers which were oriented to DEA method and health care policy. Asandului et al. (2014) evaluated the efficiency of public healthcare systems in Europe by applying a nonparametric method such as Data Envelopment Analysis. For this purpose, statistical data out of 30 European countries from 2010 have been used. Three output variables have been selected: life expectancy at birth, health adjusted life expectancy and infant mortality rate and three input variables: number of doctors, number of hospital beds and public health expenditures as percentage of GDP. Findings reveal that there are a number of both developed and developing countries on the efficiency frontier, while the great majority of the countries in the sample are inefficient. Medeiros and Schwierz (2015) estimated relative efficiency of health care systems across all EU countries. The paper used a comprehensive battery of models with different combinations

of input and output variables. Outputs are the commonly reported health outcome indicators, such as life expectancy, healthy life expectancy and amenable mortality rates. Inputs include (per capita) expenditure on health care, physical inputs and environmental variables. Results obtained in this paper are in line with previous empirical research. On average in the EU, life expectancy at birth could be increased by 2.3% or 1.8 years, when moving from current positions to the efficiency frontier. Specifically, the Czech Republic, Lithuania and Slovakia have the lowest efficiency scores in most of the models used. Hungary, Latvia, Poland and Estonia, although scoring marginally better than the previous group are also underperformers. Belgium, Cyprus, Spain, France, Italy, Sweden and the Netherlands consistently score among the top seven performers in most of the models.

3. Methodology

Data Envelopment Analysis (DEA) is non – parametric techniques and does not require a specific functional form. It is used to evaluate the performance of Decision Making Units (DMU). Using this method, we can reduce multiple inputs to a single "virtual" input and multiple outputs reduce to a single "virtual" output using the weight coefficient (Charnes et al., 1978). The efficiency of each DMU is obtained as the maximum of a ratio of weighted outputs to weighted inputs. Every ratio must be less or equal to unity. Because it is able to handle multiple inputs and outputs simultaneously, DEA can generate relative-efficiency information not usually available from other methods, including the relative efficiency ratio and the amount and source of relative inefficiency in decision units (Huang et al., 1989).

It can be concluded that the Data Envelopment Analysis is a set of models and methods that are based on linear programming which provides a means for calculating the efficiency of units within a group organization. Efficiency, which is calculated by this method, is of relative nature (Bhagavatham, 2013). Linear programming is the basis of DEA method and it makes it a more powerful tool for measuring the efficiency than any other alternative methods. Data Envelopment Analysis is widely studied and analyzed by the authors who are dealing with linear programming.

General DEA model is formulated in the following manner (Charnes et al., 1978):

$$\max h_{j_0} = \sum_{r=1}^{s} u_{rjo} y_{rjo} \Big/ \sum_{i=1}^{m} v_{ij_0} x_{ij_0} \tag{1}$$

where:
y_{rj} – output value,
x_{ij} – input value,
u_{rj} – weight coefficient of output y_{rj},
v_{ij} – weight coefficient of input x_{ij},
$r = 1, 2, …, s$ – number of achieved products,
$i = 1, 2, …, m$ – number of used resources,
$j = 1, 2, …, n$ – DMU number.

DEA method has found its way of application in many areas. For each of the areas in which it can be applied, some adjustments of the model should be made. Therefore, from the primary DEA model to this day, a quite number of different models of Data Envelopment Analysis have

been developed. They are grouped in various ways depending on the orientation, projections to the frontier of efficiency and sensitivity to the use of inputs. Some of them include the time series. DEA models can take two forms, can be input or output oriented. Input orientation aims to minimize the inputs needed to create the required quantity of output. On the other hand, the output orientation tends to maximize output for a given level of inputs.

However, DEA method can be exposed through several models. Some of them are DEA model with constant returns to scale (CCR), dual CCR model and DEA model with the variable yield on the scale (BCC) (Seiford et al., 1999). In the paper, the model with a constant yield on the scale will be used and it can be written as follows (Cook et al., 2009):

$$(\text{Max})\, h_k = \frac{\sum_{r=1}^{s} \mu_r\, y_{rk}}{\sum_{i=1}^{m} v_i\, x_{ik}} \tag{2}$$

s.t.

$$\frac{\sum_{r=1}^{s} \mu_r\, y_{rj}}{\sum_{i=1}^{m} v_i\, x_{ij}} \le 1, \quad j = 1, 2, \ldots, n$$

$$\mu_r \ge 0, \qquad r = 1, 2, \ldots, s$$

$$v_i \ge 0, \qquad i = 1, 2, \ldots, m$$

where:
h_k – relative efficiency of k DMU,
n – DMU number that can be compared,
m – input number,
s – output number,
u_r – weight coefficient for output r,
v_i – weight coefficient for input i.

In our work CCR model (input-oriented) was presented, which calculates the relative efficiency of the healthcare policy of the Republic of Serbia and Poland. The model is of the non-parametric type and is based on a linear programming technique which has already been shown. The period of 15 years was considered, and each year presents one decision making unit (DMU). In order to obtain reliable results, it is necessary to apply an adequate analysis of the efficiency variables as dependent on the quality of the selected output, i.e. input values. From the reviewed literature it can be seen that there is not quite clear attitude towards which variables are most appropriate to describe the problem. In various studies different combinations of variables were mentioned. In this study there is one input – *Health expenditure per capita, PPP (constant 2011 international $)* and two outputs – *GDP per capita, PPP (constant 2011 international $)* and *Life expectancy at birth, total (years)*.

In order to determine the degree of linear correlation between the observed inputs and outputs, the correlation analysis was conducted, both for the Republic of Serbia and for Poland. The results are shown in the following tables.

Table 1. Correlation matrix – the Republic of Serbia

	Health expedinture	GDP per capita	Life expectancy
Health expedinture	1	0.990116	0.970313
GDP per capita		1	0.944732
Life expectancy			1

Source: own work.

Table 2. Correlation matrix – Poland

	Health expedinture	GDP per capita	Life expectancy
Health expedinture	1	0.990903	0.962114
GDP per capita		1	0.974782
Life expectancy			1

Source: own work.

Collected data were taken from the official site of the World Bank, and are shown in Table 3, 4. By applying this model, the evaluation of the relative level of efficiency for each year of the mentioned period (2000-2014) in relation to the other, will be carried out.

Table 3. Structuring the DEA Model for Evaluating the Efficiency of healthcare policy of the Republic of Serbia

DMU	Health expedinture Input 1	GDP per capita Output 1	Life expectancy Output 2
2000.	377.03	7984.81	71.58
2001.	427.93	8397.89	72.23
2002.	547.36	9003.76	72.29
2003.	586.93	9421.34	72.44
2004.	668.11	10297.64	72.68
2005.	771.01	10900.87	72.83
2006.	889.80	11480.54	73.39
2007.	1046.93	12205.99	73.63
2008.	1194.99	12915.92	73.89
2009.	1169.22	12563.74	73.99
2010.	1193.03	12688.08	74.34
2011.	1222.40	12967.87	74.54
2012.	1266.62	12898.66	74.84
2013.	1317.03	13294.91	75.19
2014.	1312.22	13112.86	75.34

Source: http://www.worldbank.org/10.05.2017.

Table 4. Structuring the DEA Model for Evaluating the Efficiency of healthcare policy of the Poland

DMU	Health expedinture Input 1	GDP per capita Output 1	Life expectancy Output 2
2000.	583.68	14732.48	73.75
2001.	642.00	14920.45	74.20
2002.	732.50	15232.12	74.50
2003.	749.08	15785.41	74.60
2004.	807.22	16605.81	74.85
2005.	856.34	17193.52	75.00
2006.	934.66	18267.58	75.14
2007.	1060.62	19563.29	75.24
2008.	1241.30	20391.88	75.54
2009.	1363.93	20952.77	75.70
2010.	1437.49	21770.62	76.25
2011.	1509.43	22850.48	76.70
2012.	1544.56	23217.66	76.75
2013.	1529.92	23554.79	77.00
2014.	1570.45	24346.21	77.60

Source: http://www.worldbank.org/6.10.2016.

4. Empirical results

Based on the collected data which were analyzed using the software package *DEA Frontier*, the following results were obtained as shown in Table 2-3. On the example of the Republic of Serbia the average relative efficiency of the observed decision units is 0.63, which means that each year 63% of the inputs on average should be used in order to achieve the same value of the results and effective functioning of the healthcare system in this country. In case of Poland the average efficiency of DMU is 0.73. If we look at each decision unit in particular, on the basis of the results obtained, it can be concluded that a relatively efficient year have occurred in 2001, in both countries. Of course, the obtained efficiency rating depends to great extent on the selected variables which are the subject of analysis. A deeper analysis and insight into the concrete results can reveal that the macroeconomic indicators do not contribute to increasing efficiency.

That is, it can be noticed that certain amount of work is required to increase (decrease) the input variables in order to achieve the same level of output, if the input variables are used in an efficient manner. On the other hand, DEA method for efficiency analysis can easily lead to incorrect conclusions, therefore, only concrete and obvious conclusions should be kept.

Table 5. Healthcare Efficiency of the Republic of Serbia for the Period 2000-2014, Measured by Applying DEA Method

Input Oriented CRS		
DMU No.	DMU Name	Efficiency
1	**2000**	**1.00000**
2	2001	0.92662
3	2002	0.77671
4	2003	0.75793
5	2004	0.72777
6	2005	0.66759
7	2006	0.60923
8	2007	0.55051
9	2008	0.51035
10	2009	0.50738
11	2010	0.50217
12	2011	0.50091
13	2012	0.48084
14	2013	0.47665
15	2014	0.47184

Source: own work.

Table 6. Healthcare Efficiency of Poland for the Period 2000-2014, Measured by Applying DEA Method

Input Oriented CRS		
DMU No.	DMU Name	Efficiency
1	**2000**	**1.00000**
2	2001	0.92076
3	2002	0.82387
4	2003	0.83489
5	2004	0.81503
6	2005	0.79546
7	2006	0.77434
8	2007	0.73077
9	2008	0.65085
10	2009	0.60863
11	2010	0.60002
12	2011	0.59977
13	2012	0.59555
14	2013	0.60997
15	2014	0.61420

Source: own work.

5. Conclusion

The main objective of the paper was aimed at the analysis of the healthcare efficiency by examining two national economies: of the Republic of Serbia and of Poland. The subject of this analysis were the countries that have made significant efforts in recent years to improve the health-care system and further integrate into European and global trends. Both theoretical and empirical literature, as well as the large number of papers, suggest and conclude the healthcare impact on the macroeconomic performance through appropriate growth model. Following this statement, the contribution of this paper is reflected in the analysis of the efficiency of selected variables within one other context, by applying the methodology which is not so widely used in reference to this particular issue. The results obtained by this analysis allow the execution of the corresponding empirical findings and implications. The results showed that in the case of both observed econo-mies, the most efficient year was 2000, which also represents the period from when we started examining the variables. That year, actually represents a benchmark for measuring other relative efficiencies. Decrease in efficiency from year to year, can also be noticed, except in the case of Poland in 2013 and 2014.

Without going into deeper analysis, it is important to mention the role of financial sources of the healthcare system. In this regard, the potential reasons for such obtained empirical results were pointed out. Specifically, the overall structure of financing the healthcare system is dominated by the state sector, and its role is very strong in both countries. In order to increase the efficiency of health care, the corresponding recommendation of the authors refers to the consideration of op-tions for increasing the engagement of the private sector in financing the health care.

This paper provides an adequate basis for further research on macroeconomic indicators meas-uring efficiency. The aim was to show that the multi-criteria methods such as DEA can be applied at the macro level. Also, the research can be extended to a larger number of countries, which will enable obtaining adequate and applicable results.

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PART II

INNOVATION IN THE PROCESSES OF THE DEVELOPMENT OF ECONOMIES AND ENTERPRISES

Chapter **14**

The Real Options Method Implementation in the Management of Innovative Projects

Elena Tkachenko, Elena Rogova, Ekaterina Buynizkaya, Maria Ganieva

1. Introduction

Over the course of many years, the classic dynamic methods based on discounted cash flows used to be and still are the most popular methods to justify investment attractiveness of projects (Levy & Sarnat, 1972; Williams, 1977; Damodaran 1996). The complexity of innovation projects and uncertainty of local conditions mean that the use of such methods is not always effective, so a relatively new direction has started to develop in the field of investment analysis – the use of real option evaluation methods, i.e. methods that make it possible to take into account managerial flexibility and to assess its impact on the total cost of the investment project. We use a modified model of real option evaluation that is based on the binomial model – a polynomial model of option cost evaluation with the value of the basic asset calculated using the methods of fuzzy logic.

2. Specifics of managerial decision-making in pharmaceutical industry

The development of new medicines is a high-risk business. There are infinitely many complex chemical compounds that may have a pharmacological effect. An enterprise engaged in the development of medicines should choose such a chemical that will be put into production in the future and put on the market.

Based on the specifics of the pharmaceutical industry, a number of key features should be noted:

- high production profitability,
- high risk,
- high uncertainty,
- high investments in R&D (Research and Development),
- high marketing costs, after-marketing monitoring and sales,
- high monopolization,
- low elasticity of demand for medicines,

- mergers and acquisitions of pharmaceutical manufacturers,
- on average, the development of an original medicine takes 10-12 years.

The pharmaceutics refers to the project-oriented industries. Pharmaceutical companies are always in the process of change and implementation of various projects related to restructuring, development of new markets, introduction of modern quality management systems to the pharmaceutical industry.

In the case of economic evaluation of complex and innovative projects, it is impossible to single out only one method or even a small group of methods that could be recommended for use to substantiate the efficiency of innovative projects in general and information technology in particular. So, it makes sense to talk about the use of an integrated system of cost efficiency analysis of innovative projects where it would be possible to combine a qualitative analysis of project parameters and their functional-logical relationships with the quantitative assessment. Therefore, the cost efficiency analysis will consist of several interrelated stages (phases), each consisting in collecting and analyzing information required for the stage in the framework of approved economic-mathematical-logical model, with the analytical result to be used in the following steps, or interpreted to reach a conclusion on the expediency of the evaluated project implementation.

3. Evaluating of economic efficiency of innovative projects based on applying real options methods

One of the approaches used to assess the economic efficiency of innovative projects is based on applying real options methods. Real (managerial) options are commonly understood as options the underlying assets of which are the company's real assets. The term "real option" was first used by Stewart Myers, 1977 in his work titled *Determinants of Corporate Borrowing* where he provided an original interpretation of the essence of real options. A large number of works is devoted to the studies of real options: Brennan & Schwarz (1985), Trigeorgis (1985), Dixit and Pindyck (1994), Damodaran (1996). Copeland et al. (1993) made a great contribution to the development of this field.

The advantage of using this approach is the ability to account for the managerial flexibility present in the project being evaluated, and the opportunities open to the company that considers the project implementation.

Under the strategic approach, the real option theory is considered from the standpoint of the strategic management, and special attention is paid to the strategic importance of real options – the possibility of their design and use in close relation to the development and implementation of the company's strategy. Proponents of this approach define a real option as a management process equivalent to the strategy in its dynamics.

The essence of real options, which are a key element of the algorithm, lies in accounting and analysis of the managerial flexibility, which in turn implies the study and evaluation of the project in dynamics. With that in mind, it should be noted that the proposed algorithm is aimed not to determine the quantitative value of essential analytical indicators, but to construct a managerial decision tree based on which an optimal direction of managerial influence can be selected and formed.

The development of the algorithm took into account the specifics of a conceptual framework and tools used by participants in the process of the investment analysis – in particular, by those responsible for managerial decisions, investment and financial analytics. As a result, two levels were identified where single steps of the algorithm should be performed – managerial and analytical.

Since usually the process of investment analysis is initiated by people responsible for the managerial decision-making, and is aimed at improving the quality of decisions, it seems appropriate to define the first and the last steps of the algorithm at the managerial level. On the other hand, a certain part of the investment study process is highly analytical – it expects the use of economic and mathematical models and the application of a particular mathematical tool for their construction and implementation. These steps are performed by investment and financial analysts – and are placed at the analytical level in the algorithm. In order to integrate managerial and analytical levels in such a manner, so that the algorithm represents a coherent sequence of actions, it is recommended to use card options, i.e. such options contained in the project, which, on the one hand, are clear to management, and on the other can be the basis for further development of analytical models, and act as a liaison between the project schedule and the managerial decision tree.

The algorithm is based on the use of the modified Cox-Ross-Rubinstein model (binomial model), which consists in building a polynomial tree. This modification allows to increase the flexibility of the analysis and not be limited by two possible alternatives when building a tree (limitation of the binomial model), but to form a tree structure better reflecting the predictable dynamics of change in the discounted net cash flow generated in the process of and due to the implementation of the innovation project being evaluated.

In addition, the use of the proposed algorithm implies the performance of correlation and association analyses aimed at identifying interrelations and dependencies among the structural elements of the net cash flow.

Quite a large number of methods and models for the evaluation of real options have been developed so far, and most of them are either based on the finite difference method and partial differential equations, on lattice methods, or on simulation methods.

The use of the option approach, as noted above, implies the alliance of the strategic and financial analyses. The role of the financial analysis is that it allows, based on the financial model, to generate cash flows, evaluate profitability and risk for each strategic option separately, which affects the choice of an optimal strategic development.

In our opinion, the profitability of the strategic option ENPV can be expressed in terms of a formula (1) and two summands: the sum

$$ENPV_{SA} = \sum_{i=1}^{n} NPV_i - \sum_{j=1}^{m} C_{ij}, \tag{1}$$

where:
$ENPV_{SA}$ – a strategic option profitability, currency units;
$\sum_{i=1}^{n} NPV_i$ – sum NPV_i where $i = 1,…, n$.

NPV_i – net present value of the i – strategic project.
$\sum_{j=1}^{m} C_j$ – sum C_j where $j = 1,…, m$.

C_j – value of the j – reut option.

To get the ENPV of each strategic project, the following formula (2) should be used:

$$\text{ENPV}_i = NPV_i + \sum_{j=1}^{m} C_{ij} \qquad (2)$$

where:

$ENPV_i$ – profitability of the strategic option.

$\sum_{j=1}^{m} C_{ij}$ – cost sum of the real option of the i strategic option where $j = 1,…, m$.

So, the expanded (true) value is calculated as the sum of the expected net present value and the value available at a business entity or real options embedded in the project. In other words, the present value consists of the project value without flexibility and the real options value, which reflect the flexibility.

In order to obtain the most accurate results, an rDCF method was elaborated under the real options approach. The use of the extended net present value indicator in the evaluation of investment projects allows considering some of the risk factors faced by an entrepreneur during the implementation of the investment project.

The essence of this method comes down to the fact that a certain amount of event development scenarios is identified and evaluated followed by an expert assessment of their probability. Deviations of input parameters are calculated for each scenario, and then their performance variations are determined, on the basis of which a final calculation is carried out.

In accordance with the BioStrat report (it is a Specific Support Action (SSA)), it was concluded in 2010 that this method was more preferable for the evaluation of pharmaceutical and biotechnological companies.

The rNPV calculation formula in general is as follows:

$$rNPV = \sum_{t=0}^{n} \frac{CF_1 * P_0}{(1+r)^t * P_1}, \qquad (3)$$

where:

NPV – net present value, risk-adjusted;

P_0 – the technology probability at the initial time;

P_1 – the technology probability at a particular time t;

$\dfrac{P_0}{P_1}$ – the probability of achieving a cash flow t CF at a particular time t.

In order to calculate the rNPV of a pharmaceutical project, four project parameters should be known: clinical indicators of success, projected costs, projected market (sales) and a discount rate.

4. Evaluating of the project efficiency based on the modifying of the real options method

A fuzzy method proposed by Collan, Fullér and Mezei in 2009 was further developed in the works of Klimov in 2010.

They introduced a new method for the calculation of real options with the help of fuzzy numbers. The distribution is created by means of three or four scenarios of cash flows. If there are three cash

flows, a triangular fuzzy number is set, if there are four cash flows, so there is a trapezoidal number, correspondingly. It is expected to use three scenarios to forecast cash flows, i.e. at the output we'll get three NPV values: pessimistic (a-α), optimistic (a+β) and the most probable (Fig. 1).

Figure 1. A triangle fuzzy number with positive and negative NPV values
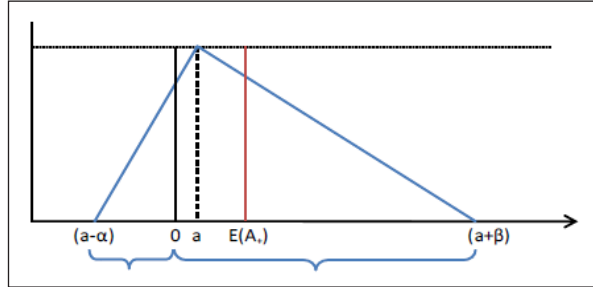
Source: (Collan, Fullér & Mezei, 2009).

Figure 2 depicts negative NPV values from ($a − α$) to 0 and positive NPV values from 0 to ($a + β$). Negative NPV values are equal to 0.

Collan, Fullér and Merzei use the fuzzy method to create the possibility distribution by swapping cash flows. The cash flows are calculated for three scenarios to show all possible outcomes and thus be a fuzzy cash flow. When performing the calculation of three scenarios, the possibility distribution is created as well as a triangular fuzzy number (FNPV), which helps to calculate the real option value.

In order to calculate the real option, its value can be found by weighting positive values against their expected probability. If the revenue is negative (NPV < 0) the NPV equals to 0, as the managerial flexibility allows management to complete the project with a projected negative NPV and in other words to avoid further investments in an unprofitable project.

The managerial flexibility in making further decisions on the project introduces an asymmetry in the probability distribution of NPV with respect to the project. In the absence of such managerial flexibility, the probability distribution of NPV with respect to the project will be symmetric. However, the managerial flexibility, for example, the option right, increases the growth potential and finally the actual distribution will be shifted to the right.

The right-side asymmetry in distribution often appears in the FBOPM calculation, when the parameters (cash flows) are presented in the form of fuzzy numbers. Liao and Ho consider in their studies a new method of finding the average FBOPM value on the basis of its right-side asymmetry.

Thus, let $C' = \left[c_1(\alpha), c_3(\alpha) \right]$ be the fuzzy number ($c_1(\alpha)$ is a minimum and $c_3(\alpha)$ is a maximum value). In cases when nothing is known about the probability of separate scenarios or the implementation of any of them is not a random event and cannot be characterized in terms of the probability theory, the so-called optimism – pessimism criterion, proposed by L. Hurwicz, is used:

$$E(C') = \int_0^1 \left[(1 - \lambda) c_1(\alpha) + \lambda c_3(\alpha) \right] da , \qquad (4)$$

$E(C')$ average value

λ – a pessimistic and optimistic weighted average index of Hurwitz, designed to account for the uncertainty effect, reflecting the system of preferences of the relevant economic entity in conditions of uncertainty. The value of special ratio λ ranges between $0 \leq \lambda \leq 1$. When $\lambda = 0$, the project efficiency is pessimistic. When $\lambda = 1$, the project efficiency is considered to be optimistic.

Below is a figure showing a case in which FBOPM is presented with asymmetry to the right side. It means that the more is the asymmetry to the right, the more is the payback probability.

In order to find a pessimistic and optimistic index we used the Liao and Ho formula:

$$\lambda = \frac{AR}{AL + AR},\tag{5}$$

where:
AR and AL are the areas shown in the Figure 2. Thus, when λ is defined, we can receive a final formula for FBOPM.

Figure 2. AL and AR value areas in the triangular fuzzy number
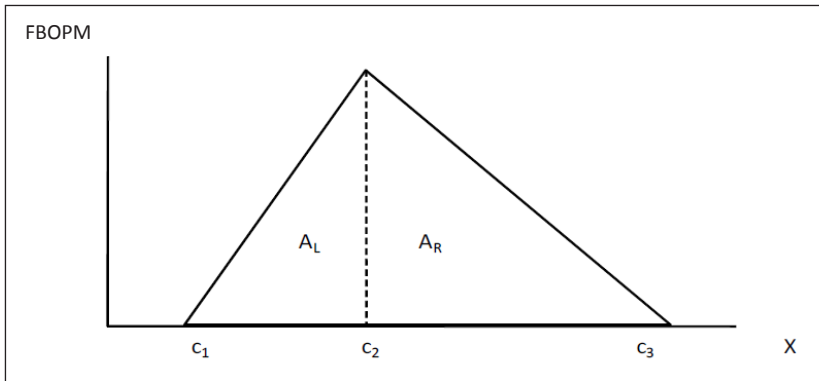
Source: own work.

In order to use the binomial method, we determined the current value, the volatility of the underlying asset and the time interval between each node of required input variables.

To improve the accuracy of modeling, we use a 6-month period and the volatility equaling 35%. The underlying asset is the value which equals to the peak sales except for marketing and production costs. In our case, the underlying asset equals to 68.8 million USD – the tree beginning. Then this value is multiplied by a relative factor of increase and decrease in each node until reaching the end of the period (12 years).

The relative e increase factor equals to:

$$u = e^{(0.35*0.5)} = 1.28\tag{6}$$
$$d = e^{(-0.35*0.5)} = 0.78$$

The most important option is a down-and-out project option, even when it is possible to eliminate the R&D costs.

The risk-neutral probability of increase and decrease is used to calculate the values in step t:

$$P_{up} = \frac{e^{(0.07*0.5)} - 0.8}{1.3 - 0.8} = 0.51 \tag{7}$$
$$P_d = 1 - P_{up} = 1 - 0.51 = 0.49$$

At the end of each project phase there is a node-point at which project managers can re-estimate the probability of achieving its goals and in the light of this assessment to decide whether to continue it further. When the achievement of certain "required" criteria or income generation becomes highly unlikely, a formal decision to terminate or suspend the project is made.

The option is evaluated, starting from the last time – from the right edge of the lattice, since at that moment the cost for each of the possible outcomes is known:

$$max\left(ST - X, 0\right), \tag{8}$$

The binomial tree of real options value, where the value of the option as of today is 7.47 million USD.

5. Calculation of the real options value using the binomial method

In order to calculate the value by this method, we need to fuzzificate the factors of increase and decrease $u' = [u_1, u_2, u_3]$ and $d' = [d_1, d_2, d_3]$, which create a three-point possibility distribution at the end of each node and volatility. The volatility is estimated within the range of 20-50%, thus the variance of our volatility is estimated at 15%.

Fuzzy volatility $= \left[\left(1 - 0.15 * 0.35, 0.35, \left(1 + 0.15\right) * 0.35\right)\right] = \left[0.2975, 0.35, 0.4025\right] \tag{9}$

Now the fuzzy factors of increase and decrease can be calculated for pessimistic, most probable and optimistic scenarios.

$$u_1 = e^{\left(0.2975 * \sqrt{5}\right)} = 1.234 \qquad d_1 = \frac{1}{u_1} = \frac{1}{1.234} = 0.810$$

$$u_2 = e^{\left(0.35 * \sqrt{5}\right)} = 1.28 \qquad d_2 = \frac{1}{u_2} = \frac{1}{1.281} = 0.781 \tag{10}$$

$$u_3 = e^{\left(0.4025 * \sqrt{5}\right)} = 1.329 \qquad d_3 = \frac{1}{u_3} = \frac{1}{1.329} = 0.752$$

With fuzzy factors of increase and decrease, the value of the underlying asset for three scenarios is calculated.

Similar to the traditional binomial model, a real option value is calculated, starting from the last time – from the right edge of the lattice. However, here a fuzzy risk neutral probability is used with

regard to fuzzy variability. This fuzzy approach creates the possibility distribution at each node that respectively reduces or increases the possible gain. To ensure this, the minimum fuzzy risk-neutral probability of increase and decrease refers to the pessimistic scenario, while the maximum fuzzy risk-neutral probability of increase and decrease refers to the optimistic scenario.

$$P_{u_1} = \frac{e^{(0.07*0.05)} - 0.81}{1.234 - 0.81} = 0.50 \qquad P_{d_1} = 1 - p_{u_1} = 1 - 0.5 = 0.5$$

$$P_{u_2} = \frac{e^{(0.07*0.05)} - 0.781}{1.8 - 0.781} = 0.51 \qquad P_{d_2} = 1 - p_{u_2} = 1 - 0.51 = 0.49 \tag{11}$$

$$P_{u_3} = \frac{e^{(0.07*0.05)} - 0.752}{1.33 - 0.752} = 0.52 \qquad P_{d_3} = 1 - p_{u_3} = 1 - 0.52 = 0.48$$

According to Liao and Ho, the fuzzy risk-neutral probability is constructed in order to show the possibility distribution (Liao & Ho, 2010, p. 2131).

$$P_u^{fuzzy} = [0.5, 0.51, 0.52] \ and \ P_d^{fuzzy} = [0.5, 0.49, 0.48] \tag{12}$$

Now it is possible to build three different fuzzy binomial trees similar to the traditional binomial approach. The final fuzzy value of the project is calculated in fuzzy binomial trees [3.91, 7.47, 14.48], where three points of the final possibility distribution are indicated as C_1 C_2 C_3 (Fig. 3).

Figure. 3. Graphical interpretation of the final possibility distribution
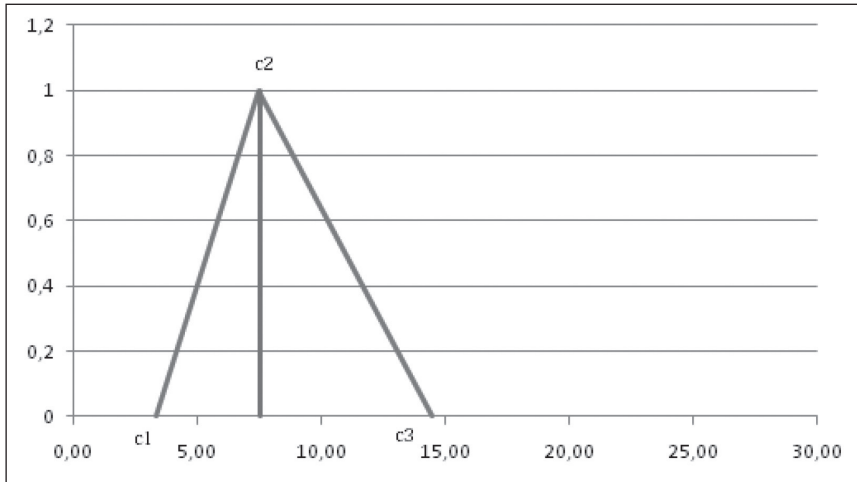
Source: own work.

$$\tilde{N}_3 - \tilde{N}_2 = 7.01$$
$$AR = 0.5 * 1 * 7.01 = 3.504$$

The same is done for the left side of the triangle, where AL=1.78, so the optimistic and pessimistic index equals to:

$$\lambda = \frac{3.5}{35 + 1.78} = 0.66$$

It follows:

$$E\left(FENPV\right) = \frac{(1 - 0.66) * 3.91 + 7.47 + 0.66 * 14.48}{2} = 9.29 \tag{13}$$

6. Conclusion

In the method of real options, we can see the impact of the right-side asymmetry while distributing the fuzzy binomial value. The traditional binomial method estimates the medicine development project at 7 million USD, while the fuzzy approach evaluates the project at 9.19 million USD. This value is the result of the fuzzy value in the optimistic scenario, which is equal to 14.48 million dollars, and the value in the pessimistic scenario is 3.91 million dollars. As in the case of the rNPV method, the value is higher, however it does not mean that the project became evaluated higher. It means that the fuzzy logic largely focuses on possible positive values and implies that negative values can be prevented by using the abandonment option.

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Chapter **15**

Monitoring of Innovation Processes[1]

Paweł Łukasik

1. Introduction

The challenges faced by companies in the age of knowledge-based economy require efficient implementation of innovation processes. The rapidly changing environment, strong competition on global sales markets, diverse and, at the same time, variable assortment of products and services, expensive capital – those are the characteristics of the contemporary economy (Mikuła, 2006). Such conditions of running innovative business require exact monitoring of innovation processes in the company. The key elements of the monitoring of innovation processes include indicators used for measuring the innovation process as a whole, indicators allowing for assessing particular phases of the innovation process, and indicators concerning selected elements of this process. The second very important element is the innovation process itself. The course of this process and its elements constitute the essence of the innovation process models described in the following sub-section.

2. Innovation process models

The basic division of the innovation process models applies to their linearity and non-linearity. Models of the first, second and third generation are linear models, presenting the innovation process as a sequence of consecutive activities, from an idea to the innovation. On the other hand, in non-linear models, the significance of the order of particular phases is relatively smaller, while greater attention is paid to interactions between participants in the innovation process. It should be emphasized that the main entity initiating the entire process in the innovation process models is the innovator, who establishes relations with other entities, decides to contract research or market studies to other entities (Truskolaski, 2014).

The aforementioned generations of the innovation process models are a part of the concept of evolution of the innovation process model.

3. Evolution of innovation process models

Changes in innovation models are gradual and dependent on changes in the economic, social and technological environment. R. Rothwell (after: Zych, 2016) distinguishes five generations of innovation process models:
1. The first generation – until the mid-1960s – technology push – (innovations spurred by technology).
2. The second generation – until the early 1970s – market pull – (innovations pulled by the need).
3. The third generation – until the mid-1980s – coupling of R&D and marketing (interactive model).
4. The fourth generation – until the mid-1990s – integrated business processes.
5. The fifth generation – from the 1990s – system integration and networking (simultaneous model).

The first and second generation models are simple, linear models. The third generation models are more complex and reflect the connections between particular elements of the innovation process and informational feedback. The fourth generation models reflect the cooperation relations in the innovative activity inside a company and with entities operating in its neighborhood. The fifth generation models reflect integrated systems, based on networking, used for providing continuous responses to customers' needs (Pomykalski, 2001).

R. Knosala et al. developed a fifth generation model containing elements of strategic partnership with suppliers and clients, as well as strategic partnership in research and development operations, including open innovation systems. The key point of the model is the innovation process controlled by the strategy and the high level of strategic and technological integration. It combines three spheres: science and technology, strategic and technological integration with clients and suppliers, and the market. The added value achieved in such an innovation process is the quality and customization of the product, resulting from cooperation with the organization's environment (Knosala et al., 2014).

The evolution of the models of innovation processes also involves gradual transition from closed innovation models to open innovation models. The closed innovation model is based on the following paradigms (Sieniewska, 2010):
1. The company employs the best experts in a given field.
2. Achievement of benefits from implementation of research and development works requires making a discovery, implementing it and utilizing.
3. The innovation process is implemented independently.
4. The aim should be to launch a new product on the market ahead of the competitors.
5. Success depends on the quantity and quality of new ideas.
6. Ensuring protection of intellectual property ahead of the competitors is very important.
   On the other hand, the paradigms of the open innovation model include (Sieniewska, 2010):
1. Cooperation with other units is necessary for acquiring the best employees.
2. Purchase of results of research and development works brings measurable benefits.
3. It is more important to prepare the right business model than to quickly enter the market.
4. The source of success is to use the best ideas (own or external).
5. Use of knowledge from outside the company and benefiting from sharing this knowledge supports the business model.

The aforementioned division into open and closed innovation process models is largely similar to the division into linear and non-linear process of innovation creation. Models pertaining to such an approach to the innovation process are discussed in the following subchapters.

4. Linear models

This group contains two basic models: the first one is the supply-driven model, in which it is assumed that innovation is caused by the impact of factors shaping supply of products, such as technology (technology-push), while the second one is the demand-driven model, in which innovations are a response to the needs of the consumers. These two innovation process models are widely described in literature on the subject, therefore certain differences exist in the process phases discussed in the literature. A. Pomykalski (2001) indicates such elements of the supply-driven model as research and development, production, marketing, the customer. This model is described similarly by K. Szatkowski (2016). D. Smith (after: Zych, 2016) identifies such stages as use of intuition and results of the conducted research, development leading to building a prototype, product design (e.g. design of the appearance, selection of materials the product is to be made of), production engineering, namely selection e.g. of whether the company will manufacture the product on its own or commission it to an external company, product testing aimed at obtaining information on whether the product will have buyers on the market, whether it is safe for users, whether certificates authorizing its commercialization can be obtained, full-scale production, commercialization of the product. On the other hand, L. Białoń (2010) distinguishes such stages as basic research, applied research, development works, implementation, production, sales. C. Freeman (after: Czerniak, 2013) presents two versions of the supply-driven model. In the aggregated perspective, the supply-driven model of the innovation process consist of basic research, applied research, invention, market tests, diffusion, and imitation. On the other hand, in the company perspective, this model includes research and development, production, and marketing. According to OECD (after: Weresa, 2014), the supply-driven model consist of basic research, applied research and development works, design and operational works, production, marketing, and sales.

Similarly, in the case of the demand-driven model, the proposed elements are diverse. R. Rothwell (after: Zych) distinguishes: market needs, development works, implementation, sales, the buyer. A. Pomykalski (2001) lists marketing, research and development, production, the customer. K. Szatkowski (2016) indicates market needs, development works, implementation and production, and the market. L. Białoń (2010) presents the demand-driven model as supplementation of the supply-driven model with marketing, while R. Knosala et al. (2014) distinguish such elements as market needs, scientific studies, design and technical development, manufacturing, market sales.

Differences between the supply-driven and the demand-driven model are presented in Table 1.

Table 1. The supply-driven and the demand-driven concept of innovation

Elements differentiating the demand-driven and the supply-driven concept	Concept	
	Supply-driven	Demand-driven
New technical solutions	Created primarily for the purpose of patenting	Created mainly at the express demand of the industry
Implementation time of the new solution	Slow	Possibly quick
Significance of economic effects	For the purposes of recording and patenting itself	Basic, determinative
Use of economic calculation	Marginal	Full
Technological progress	Achieved accidentally	Resulting from specific needs
Incentives for technical creation	Fulfillment of creative aspirations	Strong, material
Focus of creative activity	Creativity detached from demand	Creativity adjusted to demand
Participation of creators in implementation	No participation	Active participation
Representatives of the concept	J.A. Schumpeter: Business Cycles, A theoretical Historical and Statistical Analysis of Capitalist Process, New York, London 1939.	J. Schmookler: Patents Invention and Economic Change, Cambrigde 1972.

Source: (Białoń & Obrębski, 1993).

Since not all innovations are related to conducting research and development works, the so-called coupling models have been developed, taking account of the mediating role of education in creation of new products, processes, methods, etc. (Białoń, 2010).

5. Coupling models and the integrated model

Coupling models are based on the assumption that intermediate links exist between the sphere of science and companies, such as education or the patent information system. They enable application of the results of research works in practice. This group includes the model of E.A. Heaffner and Klein-Rosenberg, as well as the integrated model (Białoń, 2010).

The model of E.A. Heaffner contains the framework of two processes: scientific research and industrial development operations. The process of scientific research begins and ends with accumulated knowledge. It is the basis for the scientific motivation of researchers to search for new problems and issues yet unsolved. The main element of this process involves research and development works focused on academic achievements. Results of this research are collected by libraries and constitute the basis for creation of accumulated knowledge. On the other hand, the process of industrial development operations originates from the development level and the economic situation of the industry, determining access to accordingly high expenditures on

production start-up and accordingly high level of demand for new products. The economic situation in the sector determines the level of expected profits gained from innovations or the personal motivation of managers and owners of the business, which in turn constitutes the basis for making the decision to launch innovative activity. Its measurable effects involve new products, methods, processes, and investments, which over time translate into development of the industry and economic growth (Białoń, 2010).

Similarly, the model of S.J. Klein and N. Rosenberg presents two areas of activity: scientific research and the chain of innovations in the company. Additionally, description of the connections between the two spheres in this model is more detailed. The central chain of innovations in the company includes: potential market, works on the invention, design and testing, preparation of the working draft and production start-up, distribution and sales. This model takes account of an entire range of feedbacks. Firstly, it takes account of the existence of feedback loops after each implementation stage of the value chain and a particularly important feedback loop combining information from the market after introducing the new product with data constituting the basis for the decision to launch the innovation process of the new product. The second group of relations involves knowledge and information transferred between the sphere of science and business. These two areas are first connected at the stage of development of the invention by contracting performance of some tasks to the scientific environment. The second type of connection is indirect, through accumulated knowledge. Scientific research is executed when the available knowledge resources are insufficient to solve a problem emerging at a given stage of the value chain. The next two connection are direct. The first one constitutes support of scientific research using instruments, machines, tools, and technological procedures, while the second one constitutes support of the research by scientific disciplines related to the area of production (Białoń, 2010).

A coupling model showing the connections between social and market needs and technology, through impact of the two on the innovation process, was presented by R. Knosala and his collaborators (Knosala et al., 2014). Innovations in this model result from adjusting the needs of consumers and the development of technology. New needs and new technology are the basis for coming up with ideas for new products. They also influence the remaining elements of the production process: research and development works, technological development, implementation, sales, market sales. Relations between particular elements of the model are bidirectional.

The integrated model was a consequence of the development of the approach to innovation based on searching for many relations between particular elements of the innovation process and elements of its environment. It was also an attempt to solve problems related to the need to limit expenditures on innovations (Knosala et al., 2014). R. Rothwell (after: Zych, 2016) distinguishes the following characteristics of the integrated model:
1. Creation of teams integrating the employees of the research and development sphere.
2. There are connections between suppliers, companies and recipients of the innovative product, and between research and development activities and production activities.
3. Companies co-operate with many contractors.

An example of implementation of the integrated innovation model is the process of development of a new product in the Nissan company. It combines such areas of activity as marketing, research and development, product development, production technology, processing capacity and supply, manufacturing process, meetings of engineer/manager groups, and marketing (promoting the new product) (Białoń, 2010).

The innovation process models reflect various activities, strategies, methods, entities, and structures, depending on the challenges the innovators had to face when creating and implementing their ideas. The diversity of the elements comprising the innovation process suggests the need to indicate various measures of innovation, referring both to the entire innovation process and its particular stages.

6. Measures of innovation processes

Notwithstanding the course of the innovation process, we can distinguish input and output measures of the innovation process. Output measures include: number of the new products; revenues generated by the new products; percentage of new products in the company, percentage of new products worldwide under the innovative product portfolio of the company (Pomykalski, 2001). The above measures may be detailed to particular product categories (Anthony et al., 2010). Apart from the above measures, evaluation of the degree of modernity and product quality can also be considered to be a result of the innovative process. The evaluation of the results of the innovative process implementation also takes account of modernized products (Weresa, 2014).

The second group of indicators refers to expenditures on innovations or resources assigned to innovations. The measures of investment expenditures include: expenses on purchases related to research and development activities (Bielski, 2000, pp. 156-157), expenditures on innovations as compared to unit sales, general expenditures on R&D as compared to total sales, value of research apparatus in the overall value of fixed assets. In addition, we distinguish other resources allocated on innovations. These include, above all, human resources involved in innovations. The following may be the measure of this resource: number of employees with university degrees as compared to all employees, number of employees engaged in innovative processes as compared to all employees, number of creative teams involved in implementation of innovation projects (Białoń, 2010), number of employees in the research and development department (Bartusik, 2015). Resources dedicated to innovations also include information resources, such as: computer software, library, as well as marketing, scientific, and technical information department (Białoń, 2010).

The mutual relation between the input elements of the innovation process and its results determines the effectiveness of the undertaken activities. This group includes the following indicators: annual sales revenue of the new products as compared to the general number of full-time employees directly related to the implemented innovations, net profit as compared to the capital financing investment expenses related to implementation of the new products (Pomykalski, 2001), profitability indicators of particular research and development projects (Kaplan & Northon, 2011). Furthermore, the time needed for implementation of the innovation process is also important (Białoń, 2010).

Measures related to particular phases of the innovation process include the percentage of products at particular stages of the development process (the innovation process). An example of a measure related to the first phases of the innovation process (formulation of ideas, research and development works) is the number of new ideas generated in the organization (Pomykalski, 2001), the range of the process of idea formulation (Anthony et. al., 2010, p. 268), the number of research and development works being performed, the length of the research and development cycles (Bartusik, 2015).

Before introduction of the product to the market, the company must ensure its legal protection using the possibility to obtain patents. Measurement of this stage of the innovation process

utilizes such indicators as: number of patents (Pomykalski, 2001), number of patent applications (Bielski, 2010).

Since production and marketing are a part of the innovation process, the effectiveness of those areas affects the possibility of implementation of the innovative process. However, indicators used in these areas are subject to production management and marketing, and thus will not be discussed here.

Due to the open nature of the currently used innovation processes, indicators referring to cooperation with other entities are of particular importance. These may include, for example, the number of contracts concluded within the European Union or the number of domestic companies cooperating with a given company within the network (Białoń, 2010), and – in a more detailed way – they can also include the number of contracts concluded with other companies under research and development activity (Bartusik, 2015). If the company cooperates with many entities, a good solution would be to introduce a number of indicators that would help compare both the capability of the partner with regard to implementation of research projects, as well as his credibility in the cooperation with the analyzed company or other entities. Indicators related to possibilities with regard to research activity include: number of projects implemented in a given field and related fields, number of employees with a scientific degree in a given field, laboratory surface area, number of partners, with whom a given research and development unit cooperates. When assessing the credibility of a co-operator in research and development activities, we can use such measures as: number of recommendations issued by entities conducting research with a given center, percent of successful projects, percent of failed projects, percent of projects completed on time, number of incorrectly executed orders.

7. Conclusion

The innovation process differs depending on the entity. This results from the specific character of operations conducted by that entity, the degree of complexity and the difficulty of the research and development works, the type of innovations the entity introduces, and the specific nature of the environment, in which it operates. For this reason, every company should shape its innovation processes, in particular due to the fact that it can implement a variety of processes, e.g. some closed ones and some open ones. Selection of the relevant detailed indicators and their proper application will dependent on the course of the innovation process. Furthermore, indicators used for measuring the innovation process should be applied systematically to all projects and innovative products, which ensures their comparability over time and between different innovative investment projects. It is important for all stages of the innovation process to be properly distinguished, and for each of them to be systematically monitored.

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Chapter **16**

New Dimensions of Information and Knowledge Security in Reality of Industry 4.0[1]

Tomasz Stefaniuk

1. Introduction

From last decades traditional manufacturing industry is changing by digital transformation, which recently exponentially accelerate with technologies like e.g. intelligent robots, autonomous drones, sensors, 3D printing.

The widespread adoption by manufacturing industry and traditional production operations of information and communications technology (ICT) is increasingly blurring the boundaries between the real world and the virtual world in what are known as cyber-physical production systems (CPPSs). These changes are often referred as 'Industry 4.0'which stands for the fourth industrial revolution. Other related terms include the 'Industrial Internet' or the 'Digital Factory', although neither takes as complete a view. While Industry 3.0 focused on the automation of single machines and processes, Industry 4.0 focuses on the end-to-end digitisation of all physical assets and integration into digital ecosystems with value chain partners (Fig. 1). Generating, analysing and communicating data seamlessly underpins the gains promised by Industry 4.0, which networks a wide range of new technologies to create value (2016 Global Industry 4.0 Survey, p. 6). Industry 4.0 is currently one of the most frequently discussed topics among practitioners and researchers. But it is no longer a 'discussed future trend' – for many companies it is now at the heart of their strategic and research agenda.

Figure 1. Industrial revolutions
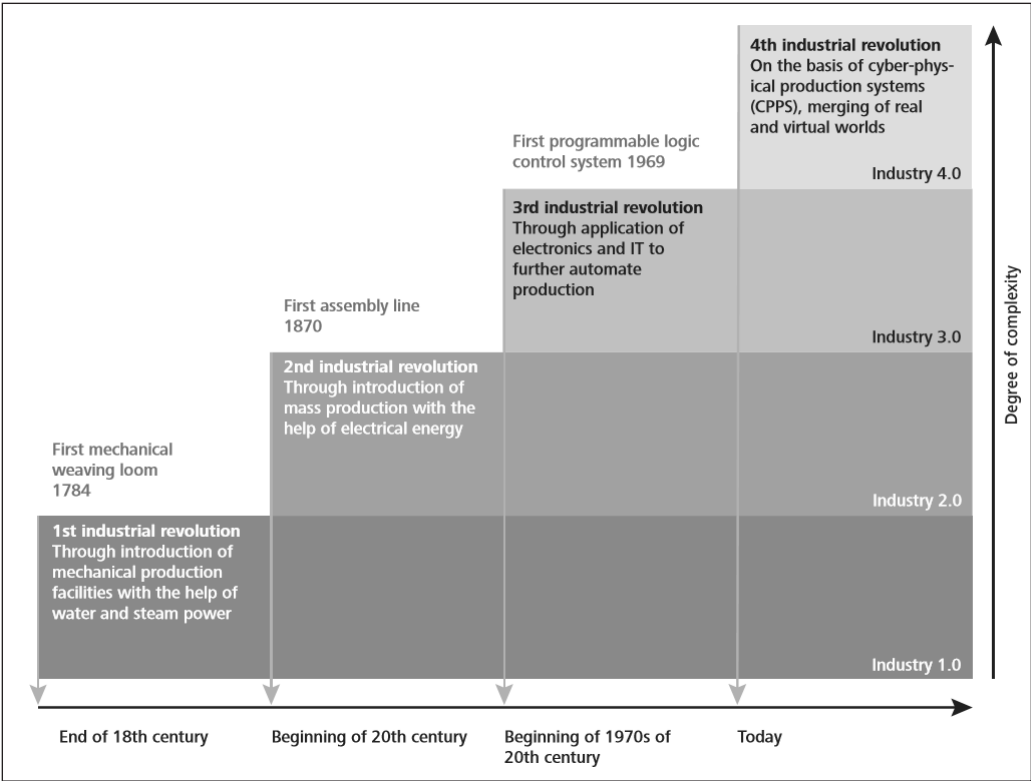
Source: (Schlaepfer et al., 2015, p. 3).

Companies are combining advanced connectivity and advanced automation, cloud computing, sensors and 3D printing, connected capability, computer-powered processes, intelligent algorithms and 'internet of things' (IoT) services to transform their businesses (2016 Global Industry 4.0 Survey, p. 11).

2. The characteristic of Industry 4.0

The concept of Industry 4.0 is often described in the literature from the perspective of numerous technologies applied in industrial activity. The authors list 4, 5 or 9 technologies that contribute to the next industrial revolution[2].

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[2]   E.g. (Hermann et al., 2015; Draxler, 2016; Wittbrodt & Łapuńka, 2017, p. 798).

Figure 2. The Nine Pillars of Industry 4.0
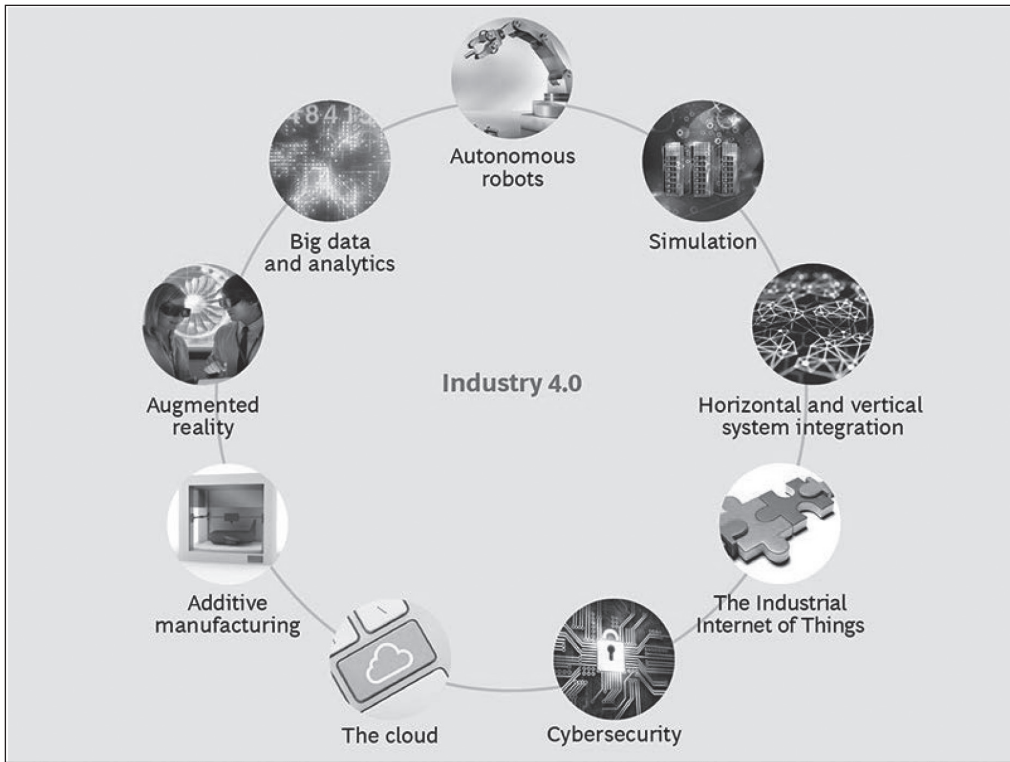
Source: (Dmowski et al., 2016, p. 9).

The following describes 9 technologies that, according to Rüßmann et al. (2015) form the foundation for Industry 4.0[3]:

1. Big Data – is a collection of data from traditional and digital sources inside and outside your company that represents a source for ongoing discovery and analysis. Today data is collected everywhere, from systems and sensors to mobile devices (Arthur, 2013). Analytics based on large data sets has emerged only recently in the manufacturing world, where it optimizes production quality, saves energy, and improves equipment service. In an Industry 4.0 context, the collection and comprehensive evaluation of data from many different sources – production equipment and systems as well as enterprise- and customer-management systems – will become standard to support real-time decision making.

2. Autonomous Robots. They are becoming more autonomous, flexible, and cooperative. These robots are interconnected so that they can work together interact with one another and automatically adjust their actions to fit the next unfinished product in line. High-end sensors and control units enable close collaboration with humans and learning from them.

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[3] https://www.bcgperspectives.com/content/articles/engineered_products_project_business_industry_40_future_productivity_growth_manufacturing_industries/?chapter=2#chapter2_section2.

3. Simulation will leverage real-time data to mirror the physical world in a virtual model, which can include machines, products, and humans. This allows operators to test and optimize the machine settings for the next product in line in the virtual world before the physical changeover, thereby driving down machine setup times and increasing quality.

4. Horizontal and Vertical System Integration. Most of today's IT systems are not fully integrated. But with Industry 4.0, companies, departments, functions, and capabilities will become much more cohesive, as cross-company, universal data-integration networks evolve and enable truly automated value chains.

5. The Industrial Internet of Things. With the Industrial Internet of Things, more devices – sometimes including even unfinished products – will be enriched with embedded computing and connected using standard technologies. This allows field devices to communicate and interact both with one another and with more centralized controllers, as necessary. It also decentralizes analytics and decision making, enabling real-time responses.

6. Cybersecurity. With the increased connectivity and use of standard communications protocols that come with Industry 4.0, the need to protect critical industrial systems and manufacturing lines from cybersecurity threats increases dramatically. As a result, secure, reliable communications as well as sophisticated identity and access management of machines and users are essential.

7. The Cloud. Companies are already using cloud-based software for some enterprise and analytics applications, but with Industry 4.0, more production-related undertakings will require increased data sharing across sites and company boundaries. At the same time, the performance of cloud technologies will improve, achieving reaction times of just several milliseconds. As a result, machine data and functionality will increasingly be deployed to the cloud, enabling more data-driven services for production systems. Even systems that monitor and control processes may become cloud based.

8. Additive Manufacturing. Companies have just begun to adopt additive manufacturing, such as 3-D printing, which they use mostly to prototype and produce individual components. With Industry 4.0, these additive-manufacturing methods will be widely used to produce small batches of customized products that offer construction advantages, such as complex, lightweight designs. High-performance, decentralized additive manufacturing systems will reduce transport distances and stock on hand.

9. Augmented Reality. Augmented-reality-based systems support a variety of services, such as selecting parts in a warehouse and sending repair instructions over mobile devices. These systems are currently in their infancy, but in the future, companies will make much broader use of augmented reality to provide workers with real-time information to improve decision making and work procedures.

Above technology changes will transform not only production processes. In effect, the name "Industry 4.0", which directly refers to the three previous revolutions that changed the rules for the functioning of industrial plants, may be misleading this time. The scope of this change is much broader: it affects us all. It is also deeper because it concerns the essence of conducting business activities as well as penetrates a significant part of everyday life.

Figure 3. Industry 4.0 framework
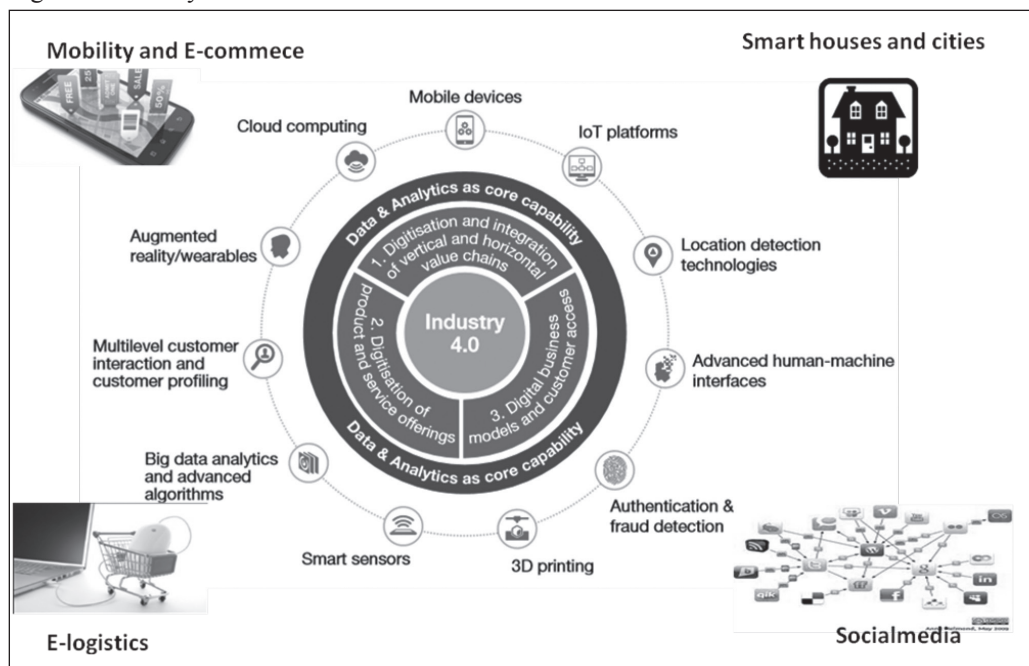
Source: (2016 Global Industry 4.0 Survey, p. 6).

In PwC view, as a result of technological changes in Industry 4.0, there are 3 main directions of development in organizations (Fig. 3):
1. Digitisation and integration of vertical and horizontal value chains.
2. Digitisation of product and service offerings.
3. Digital business models and customer access.

Industry 4.0 digitises and integrates processes vertically across the entire organisation, from product development and purchasing, through manufacturing, logistics and service. All data about operations processes, process efficiency and quality management, as well as operations planning are available real-time, supported by augmented reality and optimised in an integrated network.

Horizontal integration stretches beyond the internal operations from suppliers to customers and all key value chain partners. It includes technologies from track and trace devices to real-time integrated planning with execution.

Digitisation of products includes the expansion of existing products, e.g. by adding smart sensors or communication devices that can be used with data analytics tools, as well as the creation of new digitised products which focus on completely integrated solutions. By integrating new methods of data collection and analysis, companies are able to generate data on product use and refine products to meet the increasing needs of end-customers.

Leading industrial companies also expand their offering by providing disruptive digital solutions such as complete, data-driven services and integrated platform solutions (2016 Global Industry 4.0 Survey, p. 6).

Digital transformations force a change in organizational models. There are emerging new forms of work organization, such as: network organization, virtual organization or virtual team. There are also change models of organization-to-customer relationships, including the new forms of web-based communication.

On 24 March 2015, it was released by European Commission report: 'Digital Transformation of European Industry and Enterprises' – from the Strategic Policy Forum on Digital Entrepreneurship. The report showcases new business opportunities that have resulted from unprecedented business models and that are being powered by advanced digital technologies.

The biggest digital opportunity for Europe is in the transformation of existing industry and enterprises. New business models challenge traditional ways of doing business. Europe needs to fully exploit these opportunities to become more competitive and a better place to invest and do business.

Industry 4.0 have many business benefits including:

- Reduced costs. According to PwC (2016 Global Industry 4.0 Survey, p. 12). Report, companies expect to reduce operational costs by 3.6% p.a., while increasing efficiency by 4.1% annually. High levels of cost reduction are expected in every industry sector.
- Improved decision making. Digital platforms will connect entire value streams to enable suppliers, the manufacturer and their clients to communicate and react to changes. It will be possible to make quicker and more accurate decisions about which products to manufacture and how to manage your departmental teams.
- Higher customer satisfaction. By collecting valuable data about your customer's preferences based on their actual orders and behavior you can adjust your production schedules, marketing materials and sales strategy to account for this in real time. If your products need to be personalised at point of sale and this is currently a manual process, a platform can automatically achieve this.
- Continuous Improvement. Digital technology can be employed as a tool to improve continuous improvement activities, make them more efficient and provide tailored reports to all levels of management.

3. Information security as the main challenge as well as success factor for Industry 4.0

The threat of data security is on the rise in a hyperconnected world. Firms are reporting a growing number of incidents[4], with increased awareness of the problem and the development of monitoring processes – 96% of companies have experienced more than 50 incidents in 2016. Vectra Networks, an analysis of more than 250,000 endpoints in 40 US organizations, that almost every corporate network has traces of its infiltration, regardless of its size or business sector (Bajecka, 2015).

One of the main causes for an increasing number of information security incidents is the widespread use of ICT tools in organizations.

The specificity of "Industry 4.0" makes, that there are even more factors that increase the risk of information security incidents, than in traditional organization. The most important are:

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[4]   Year after year, there is 38% increase in detected information security incidents. (The Global State of Information Security® Survey 2016, p. 2).

1. <u>More ICT technology.</u> Already we are seeing mass exploits of bugs and vulnerabilities in IoT devices. It is possible to track connected or embedded devices such as cameras, microphones, keyboards and monitors, or standalone robots (or even take control over them). In October 2016, the Mirai botnet, with more than 400,000 webcams, was used to attack websites of Internet service providers and portals[5]. The rapidly growing number of sensors, embedded systems and connected devices as well as the increasing horizontal and vertical networking of value chains in Industry 4.0 result in an opening up the company's IT infrastructure, making it more susceptible to errors and more vulnerable to attack. Monitoring of such devices, used in production, is also a challenge from software and hardware perspective, which is often ignored. All devices whether industrial machines, computer, tablets, or smart phones needs to be updated on regular basis whether to avoid threats or due to configuration changes installed in these devices spread across the geographical location or inside factory (Khan & Turowski, 2016, p. 36). More touchpoints where data is collected and exchanged also means more potential points of entry for an attacker.
2. <u>Big data.</u> Owning an information and knowledge resources by organization implies the emergence of threats to its security. The more unique and innovative is knowledge, the more the risks associated with targeted human activity increase. Data lies at the heart of the fourth industrial revolution. Data is coming here from multiple sources, in different formats, and there is a need to combine internal data with data from outside sources. Expert and effective data analytics is essential to using data to create value. And with so many points of entry, companies need to take a rigorous, proactive approach to data security and related issues and work to build digital trust.
3. <u>Cloud.</u> The cloud platform provides a centralized foundation for constructing, integrating and accessing other technologies in Industry 4.0 and created new security challenges. While there are many security concerns in the cloud, The Cloud Security Alliance in Top Threats research identified the following 12 critical issues to cloud security, ranked in order of severity per survey results[6]:
    a. Data Breaches,
    b. Weak Identity, Credential and Access Management,
    c. Insecure APIs,
    d. System and Application Vulnerabilities,
    e. Account Hijacking,
    f. Malicious Insiders,
    g. Advanced Persistent Threats (APTs),
    h. Data Loss,
    i. Insufficient Due Diligence,
    j. Abuse and Nefarious Use of Cloud Services,
    k. Denial of Service,
    l. Shared Technology Issues.

Attacks specifically designed to penetrate industrial control systems present a threat to production facilities. In a worst-case scenario, a misdirected machine could cause physical damage in its vicinity.

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[5]   https://krebsonsecurity.com.

[6]   https://cloudsecurityalliance.org.

Commands to industrial robots are sent via embedded systems, which are usually connected to a programmable logic controller. The control components are linked to the Internet. An attacker can therefore read application and system data, install data packets designed to sabotage the production lines, related systems or even the entire corporate IT infrastructure[7]. According to PwC (2016 Global Industry 4.0 Survey, p. 20) survey respondents flagged many negative consequences around data security, with operational interruption from cybersecurity breaches at the top of their list (see Fig. 4). Other issues like liability risks, unauthorised access to data and damage to company reputation are on the radar too.

Figure 4. The biggest consequences of data security incidents for Industry 4.0
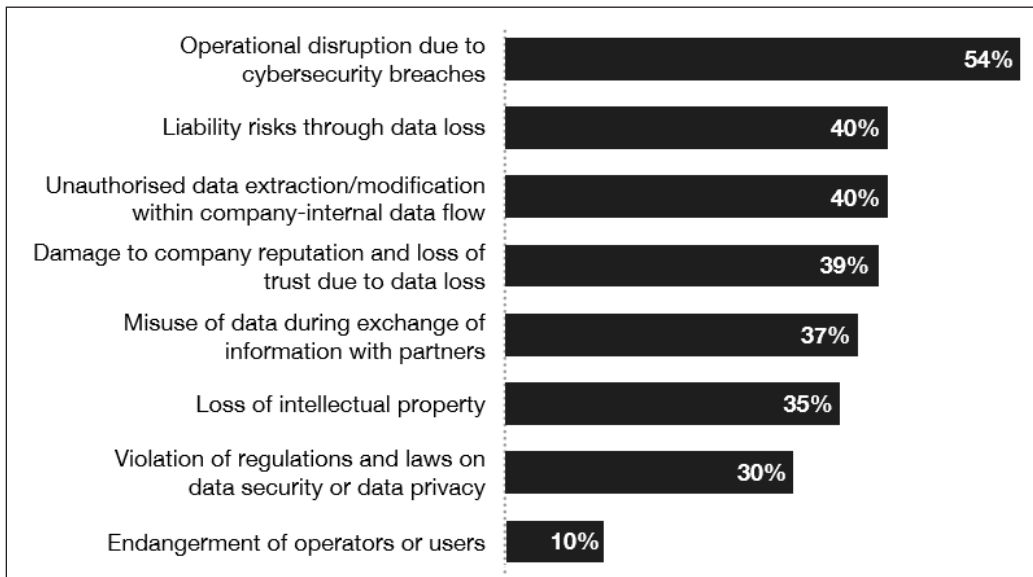
Source: (PwC 2016 Global Industry 4.0 Survey, p. 20).

It all makes, that data security and data privacy as one of the top 3 challenges for Industry 4.0 efforts. Of the German companies, 41% rated data security as a major challenge (Lorenz et al., 2016).

3. Conclusion

Industry 4.0 means opportunities and challenges. In order to gain long-term benefits from the huge opportunities offered by Industry 4.0, manufacturing companies must establish an effective and efficient security management system for their "smart factories". In that security system, also important will be working together with ecosystem partners; with possible points of attack spread out throughout the ecosystem, responsibility needs to be shared broadly.

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[7]   https://www.infosecurityeurope.com

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Chapter **17**

Equity Crowdfunding in Europe: Challenges, Opportunities and Risks for Innovative Startups

Tindara Abbate, Patrizia Accordino, Elvira Tiziana La Rocca, Daniela Rupo

1. Introduction

Advancements in Information and Communication Technology (ICT), diffusion of social networks and online platforms have changed the entrepreneurial finance landscape creating new opportunities for entrepreneurs and investors (Vismara, 2016; Wright et al., 2016). In addition, the global financial crisis has increased the firms' difficulties to get new capital (Wilson & Silva, 2013) and has led to new financial forms for entrepreneurial ventures (Wright et al., 2016).

Among these financial innovations, crowdfunding is emerging as an alternative financing method to the traditional ways of funding, generally used for new business ventures, cultural, social or non-profit initiatives. Specifically, crowdfunding deals with collectively raising small amounts of money from a large number of people through the Internet. Although the global crowdfunding industry is expected to continue growing at a rapidly accelerating rate, the crowdfunding is a relatively novel phenomenon so that little academic research has been conducted in this area.

Starting from crowdfunding's concept, main trends and categories, the paper intends to deepen challenges, opportunities and risks lie ahead for equity crowdfunding, a particular form that is considered by policy makers as a potential source of funds for young innovative firms. According to Ahlers et al. (2015, p. 958) "*Equity crowdfunding is a method of financing, whereby an entrepreneur sells a specified amount of equity or bond-like shares in a company to a group of (small) investors through an open call for funding on Internet-based platforms*".

The study explores the features of equity crowdfunding examining its tax implications in the opinion of the European Commission and the crowdfunding rules in Europe, its advantages and disadvantages, with a focus on its impact on innovative startups. The equity crowdfunding challenges are more complicated than those presented by other crowdfunding forms. The investing risk is high and the information asymmetry matters exacerbated. To successfully raise funds, through an equity crowdfunding platform, startups need to identify and use different ways to signal their value to potential investors.

In addition, the work presents an overview of the relationship between equity crowdfunding and venture capital investments. New and traditional financial forms may be substitutes or

complementary including coinvestment among different forms (Wright et al., 2016; Zhang et al., 2016). In future, these financing mechanisms could go together complementing each other. Equity crowdfunding could provide a complementary channel to Venture Capital (VC) industry through which startups can obtain finance and some advantages by exploiting the Internet potential.

The study will add value to the area of equity crowdfunding by looking into the importance of this innovative form of financing, considering its relevant contribution to start and support innovative new ventures.

The paper is structured as follows. The next section provides a description of the crowdfunding phenomenon. Section 3 explains the equity crowdfunding rules in EU. Section 4 presents a theoretical background about innovative startup and equity crowdfunding. Section 5 analyses the relationship between equity crowdfunding and VC Industry. The final section discusses some implications and concludes promising avenues for further research.

2. Crowdfunding phenomenon

Crowdfunding's contribution to entrepreneurial fundraising is spreading rapidly all over the world, having a wide market especially in the USA, the UK and Germany (Haas et al., 2014) and increasing amount of money intermediated. The World Bank estimates that crowdfunding could account for over $300 billion in cumulative transactions by 2025 (Short et al., 2017).

Crowdfunding is playing a significant role in financing new small ventures, especially those at the seed and early stage (Manchanda & Muralidharan, 2014; Karen et al., 2014).

Despite the popularity of this type of funding is emerging, it is far from being a new phenomenon, considering that, citing a famous example, in 1885 Joseph Pulitzer, by soliciting investments from the readership of his New York World newspaper, funded the Statue of Liberty's pedestal's completion, thus obtaining $1 by each investor and raising over $100,000 for the project (Short et al., 2017, p. 150).

Actually, the recent success of crowdfunding, defined as "a new twist on a relatively old practice of raising money" (Griffin, 2013, p. 377), and to some extent also determined by the global financial crisis (Dushnitsky et al., 2016), is mostly driven by the use of Internet platforms (as Kickstarter.com). This reduces transaction costs allowing to collect small sums from a large pool of funders. Acting as an intermediary (Haas et al., 2014), crowdfunding platforms facilitates the link between *capital-seeking agents* (initiator of a project, such as artists, entrepreneurs) and *capital-giving agents* (the "crowd": i.e. investors, funders, backers, supporters). The crowdfundig model is considered a success factor enabling access to finance for entrepreneurs, on condition that the proponent (fundraiser) is able to advertise a business concept in a persuasive way, supporting the campaign with adequate and reliable business plan, being mindful to do it correctly and with responsibility. It is a fact that, as well as it is easy to reach the "crowd" through open platforms, people can also share their opinions, often professional view, and the fundraiser's reputation could be ruined forever if he gets it wrong (Assenova et al., 2016).

All classifications proposed in literature for different types of crowdfunding are based on the following aspect: the return type expected by the funder, somehow referable to *hedonism*, *altruism* or *for profit* motivation (Gierczak et al., 2016). The types of financial models related to the crowdfunding phenomenon are (Wilson & Testoni, 2014; Short et al., 2017; Gierczak et al., 2016):

1. *donation-based*: funders support the cause donating a sum, without expected compensation (philanthropic or sponsorship-based incentive);
2. *reward-based*: funders expect a non-financial reward for their support (i.e. a gift, a first edition release);
3. *lending-based* or *debt-based* (crowd lending): funders expect periodic fixed income (interest) and the final repayment of the amount originally lent. In some cases of social platforms, such as Kiva (Short et al., 2017), only the principal is returned and investors renounce to interests;
4. *equity-based* (crowd investing): funders expect compensation as a pro-rata revenue or profit-share, depending on the fraction of the target amount of equity they decide to commit.

The four models have different level of complexity and uncertainty, both increasing from the type 1 to the type 4. The risk associated with philanthropic model is low and the legal aspect is simple, because funds are given in the form of donation. Conversely, the highest level of complexity and uncertainty characterizes the equity-based model. The funder needs to make a preliminary estimation of the value the company is able to create in order to decide the stake to buy in the business. In addition, this judgement is primarily based on the entrepreneur's ability to show the validity of the project and on his reputation. Anyway, the backer runs the risk of inadequate returns in respect of his expectation.

3. Equity crowdfunding: the EU rules

Choosing the *equity based* crowdfunding, investor expects a financial remuneration for its investment consisting in dividends received from shares, royalties of intellectual property rights or revenue from bonds and other securities (Vitali, 2014; Rossi, 2014).

Moreover, this model assures all the economic and administrative rights, which derive from holding shares in the company.

The European Commission has repeatedly addressed the issue of crowdfunding, for example, by launching a consultation in 2013[1] and later in February 2015 by asking questions to the European Union Vat Committee.

The Committee, in October 2015, developed some guidelines (taxud.c., 1, 2015, n. 576037).

With regard to the equity-based model, the reward received by the contributor from the entrepreneur may be taxable or not, depending on its nature.

If the contributor's remuneration takes the form of participation in future profits, as the ownership of intellectual property rights, it may be a taxable supply of services, falling within the scope of VAT (art. 25, c. 1, *a*, VAT Directive 2006/112/EC). While, on the other hand, if the remuneration is represented by securities such as shares or bond, it is a financial reward that would fall within the exemptions provided for in art. 135 of the VAT Directive.

Moreover, carrying out intermediary services to entrepreneurs, the activity of crowdfunding platforms are economic activities falling within the scope of VAT (Merkx, 2016). Only if these intermediary services consist in financial services, such as payments or transfers, exemptions pursu-

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[1] Brussels, 27.3.2014 Communication from the Commission to the European Parliament, the Council, the European economic and social Committee and the Committee of the Regions, Unleashing the potential of Crowdfunding in the European, COM(2014) 172 final Union from http://ec.europa.eu/internal_market/finances/docs/crowdfunding/140327-communication_en.pdf.

ant to Article 135(1) of the VAT Directive may apply, and the VAT Committee almost unanimously agreed with this conclusion.

These guidelines have been approved, partly unanimously and partly in an almost unanimous manner. It means that these are not legally binding decisions and it is up to each Member State to adopt rules on this topic, following, more or less closely, such guidance (Boria, 2015; Dorigo, 2016). However, they cannot completely disregard them.

As a result, the European Commission finds that crowdfunding actually remains a national phenomenon that does not need EU-level policy intervention, excepting those proposal guidelines on Vat implications; but it cannot be excluded that the Commission may choose to elaborate precise provisions.

In this context, Italy was the first European Country to develop a regulation on equity crowdfunding, only referred to innovative start-ups and to SMEs[2] (Lamberti, 2015). France[3], Germany[4] and the United Kingdom[5] have introduced specific rules in the last three years.

The italian legislator did not exclude that under the introduction of the equity model there is the overall objective of encouraging the growth of innovative start-ups and the more specific intent to enforce their capitalization (Laudonio, 2014; Pais & Castrataro, 2014).

With reference to our Country, those who adopt crowdfunding transactions enjoy all the incentives provided by the start-up rules (Giudici et al., 2013).

The contribution is an amount representing economic and administrative rights, but it does not allow the distribution of profits, at least for the whole period in which the enterprise will take advantage of the favourable provisions adopted for people who invest in innovative startups in Italy. And so, as long as such conditions are maintained, the reward is not taken into account in an income perspective, for taxation purposes.

4. Equity crowdfunding and innovative startups

As underlined, the equity crowdfunding is gaining more and more attention from policymakers and new entrepreneurs as a potential and alternative form of fundraising for innovative startups, considered a segment of economy that has limited economic resources and restricted access to conventional financing forms (Giudici et al., 2012). In fact, a large pool of people with their (very) small contributions are often the primary targets of startups oriented to solicit financial support from a distributed audience. These entrepreneurial companies do not possess normally the abilities and capabilities to efficaciously research and evaluate potential investments. In this way, they can have a suitable opportunity to use new sources of capital for their business.

To successfully raise funds, through an equity crowdfunding platform, startups need to identify and use different ways to clearly signal their value and their innovative solutions/products or ideas to potential small investors (Connelly et al., 2011). In this respect, the signaling theory (Spence,

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[2]   Decree-Law 179/2012 on *"Further urgent measures for Italy's economic growth"*, converted into Law 221/2012.

[3]   A new crowdfunding regulation came into force in France on 1 October 2014, called *Official order No. 2014-559* of 30 May 2014.

[4]   In Germany, on 28 July 2014 the first draft of the *German Retail Investor's Protection Act* was published, containing the first specific crowdfunding regulation in Germany.

[5]   Policy statement 14/4, *The FCA's regulatory approach to crowdfunding over the internet, and the promotion of non-readily realisable securities by other media*, March 2014.

1973) has been considered to explain which types of information lead investors to put their money in the project of innovative startups (Ahlstrom & Bruton, 2006; Cosh, Cumming & Hughes, 2009; Coleman & Robb, 2014; Robb & Robinson, 2014). For example, information is related to board characteristics, top management team, the presence of venture capitalists or angel investors, gender, founder educational degree, founder involvement, etc. However, this stream of literature has focused principally on the signaling of young startups toward angel investors or venture capitalists (Mäkelä & Maula, 2006; Schwienbacher, 2007). Certainly, the way entrepreneurs of startups would signal to (small) investors is likely to be different from the way they would signal to venture capitalists. Generally, small investors are those who (1) invest relatively small amounts of money and (2) receive a relatively small stake of a company in return (e.g., Malmendier & Shanthikumar, 2007). They are likely to lack the financial sophistication, knowledge and experience of evaluating investment opportunities, who are highly knowledgeable about valuing startups and assessing founding teams (Freear, Sohl & Wetzel, 1994). Furthermore, relative to their investments, the costs for angel investors and venture capitalists to evaluate ideas and teams are objectively small, but they would be prohibitively high for small investors. Ahlers et al. (2015) underline that providing more detailed information about effective risks linked to entrepreneurial initiative can be interpreted as effective signals and can strongly influence the probability of funding success. Baum and Silverman's (2004) examine how investors will most likely be able to use the attributes of venture quality provided by entrepreneurs in the offering documents (i.e., human capital, social capital, and intellectual capital). This implies that projects are more likely to obtain funding if they have several characteristics that are generally contemplated to indicate higher venture quality. Consequently, "*an investment in higher quality projects has a greater likelihood of generating higher returns in the future, and therefore represents a favorable investment option*" (Ahlers et al., 2015, p. 6). Differently, "*the less (precise) the information provided by entrepreneurs increasing the level of uncertainty, the more restricted potential investors may be in assessing the proposed venture*" (Ahlers et al., 2015, p. 6). Then, investors will have detailed information that present venture's attractiveness, offering a precise overview of the risks, opportunities and financial forecasts, and helping to lessen the risk of asymmetric information between investors and entrepreneurs.

5. Equity crowdfunding and venture capital

It's important to deepen the impact that equity crowdfunding could have on VCIndustry and how to configure the relationship between this new financial form and traditional players, such as business angels and venture capitalists.

A key factor is the funding process itself (Belleflamme et al., 2014; Moritz & Block, 2016). In the equity crowdfunding, the online platform simplifies the transaction between entrepreneurs and investors, but the investments in startups are generally smaller than VC investments (Belleflamme et al., 2014). These players are, generally, involved in different stages of firms' life cycle. Equity crowdfunding is appropriate in the first phases of development in which funding is, provided by the founder, by his family and friends, by business angels. VC often invests in startups in their later-stage investments (Wilson & Testoni, 2014). VC provides value added services useful for the success of the entrepreneurial activity, indeed business angels and venture capitalists play an active role in supporting startups in their evolution providing financial capital, but also management

skills (human capital) and access to relationships network (social capital) useful for the success of entrepreneurial activity (De Clercq et al., 2006; Dimov & Shepherd, 2005; Pratch, 2005).

Comparing to VCs, crowd investors are not professional (Schwienbacher & Larralde, 2012; Agrawal et al., 2013; Mollick, 2013; Macht & Weatherston, 2014) and equity crowdfunding presents less distortions (Mollick, 2013) (for instance in terms of geographic concentration). VCs and entrepreneurs are concentrated in specific areas, thus it's easier to support, monitor and interact (Mollick, 2013; Vismara 2016). Instead, equity crowdfunding is less geographically concentrated than VC Industry (Agrawal et al., 2011; Mollick, 2013) and online platforms are less influenced by spatial proximity (Agrawal et al., 2011). Entrepreneurs disclose information online and usually don't have personal relationship with potential investors (Ahlers et al., 2015; Vismara, 2016). The information asymmetry matters increase and the signals play an important role for investors to reduce the level of uncertainty (Ahlers et al., 2015; Vismara, 2016).

According to some authors (Manchanda & Muralidharan, 2014; Assenova et al., 2016), equity crowdfunding could represent an opportunity and it could be complementary to VC industry, providing a complementary channel through which startups can obtain finance and some advantages by exploiting the Internet potential. These internet-based financing platforms could help VCs to easier identify opportunities and promising startups, to get public reviews of business future and to enhance their startup portfolios network (Manchanda & Muralidharan, 2014; Assenova et al., 2016). As result, a much larger pool of companies could become available for VC funds. "*Both the industries could go hand in hand*" (Manchanda & Muralidharan, 2014, p. 373). Recently, some VC firms have invested into crowdfunding platform while others are creating their own crowdfunds.

6. Conclusion

The paper has provided a description of crowdfunding and an overview on this topic with the aim to deepen challenges, opportunities and risks lying ahead for equity crowdfunding, considered as a potential source of funds for young innovative firms. From this study, we can draw several conclusions.

We start underlining some theoretical implications: crowdfunding assures a direct relationship between the actors of the transactions, thanks to the simplicity of the online mechanism. With regard to innovative entrepreneurship, it has the advantage of overcoming their difficulties in providing guarantees that are indispensable for bank financing or any other form of debt financing. These tools, because of the economic crisis that affects the markets, are, now, less available, due to their burdensome.

Additionally, crowdfunding allows a preliminary review of the potential of the objective to be pursued and a significant reduction in all those costs linked to the dynamics of the transactions.

Political approach suggest that governments of the Member States can help the development of crowdfunding, creating favorable conditions as reduction of disclosures costs by using this financing method, removing obstacles as territorial limitations, and business, size and time restrictions in granting crowdfunding and establishing clear rules. Moreover, taking into account the exits of the European Commission, there seems to be no doubt that the choice to introduce a VAT taxation would be highly incisive for the development of the model of crowdfunding, discouraging project creators, and making the economics of equity-based crowdfunding far less attractive.

With respect to managerial implications, for entrepreneurs in equity crowdfunding the main challenge is signaling their project quality. An accurate planning is required to prepare, to promote and to execute the entrepreneurial venture through the equity crowdfunding platforms.

The research has also highlighted some disputable aspects. First of all, the risk of fraud on the platforms in absence of rules in some Member States. Another controversial side is the involvement of numbers of investors who might interfere with the choices of the company. This means that further research should concern the latter conclusions and pay attention to the impact on investors of the factors that could represent a considerable disincentive for the investors.

Future studies could investigate the behavior of business angels and venture capitalists that operate on equity crowdfunding platforms and could provide insight into the complementarity or substitute roles among new and traditional financial forms.

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Chapter **18**

Technology Entrepreneurship and the Competitiveness of Advanced Technology Sector Enterprises

Zbigniew Chyba

1. Introduction

Enterprises' innovation and competitive levels are largely determined by their employees' and the entire organisations' technology entrepreneurship. This is a novel concept containing many elements which are characteristic of modern science and technology. These include university entrepreneurship, technology transfer and broadly-defined intellectual entrepreneurship.

The purpose of this paper is to present the model of the relationship between technology entrepreneurship in advanced-technology sector enterprises and their competitiveness and to discuss their key determinants. The first section discusses the concept of entrepreneurship and its various definitions and dimensions. The concept of technology entrepreneurship, its determinants, and the key role of technology and technology potential is the discussed. This is followed by a presentation of the concept of enterprise competitiveness, its definition and methods of measurement. The following section proposes a the model of the interdependence of technology potential and the competitiveness of high-technology sector enterprises with a discussion of the key determinants. The paper concludes with a summary presenting the most significant conclusions and recommendations for enterprises relating to technology entrepreneurship development.

2. Technology entrepreneurship

Entrepreneurship is a complex and multifaceted concept whose practical impact on social and economic development cannot be overstated. It can be understood in various ways – as a character trait (inherited or acquired), as a predisposition to conduct business activity, as a socioeconomic phenomenon, a organization and management method or as a field of teaching. In the most general sense, it signifies specific characteristics of certain individuals. Some people are naturally more inclined to undertaking activity and risk taking than others.

In another sense, entrepreneurship is seen as a predisposition to conduct business activity, a specific process that consists of developing and implementing broadly-defined innovation either

in the enterprise or on the market. Entrepreneurship is thus a process of creating something different in terms of value, which requires financial outlays, time and effort, and involves financial and moral risk. Entrepreneurship is also the initiation and/or development of some undertaking using innovation and involving a certain level of risk.

The term entrepreneurship can also refer to a specific management approach. The main characteristics of entrepreneurial management are:

- formulating company strategy based on the opportunities that appear in the surroundings, without being limited by the resources possessed,
- fast and decisive engagement in opportunities, seizing opportunities quickly,
- maximizing value created with minimum outlays of funds,
- hiring appropriate specialists full-time and appropriate specialists part-time,
- management structures that ensure contacts with all the employees as well as the surroundings,
- rewarding for results achieved.

Most authorities on the subject agree that the essence of entrepreneurial activity is seeking out and using opportunities and creating innovative solutions. Thus, entrepreneurship means innovation and is a specific act of creating something new thanks to the creativity of the internal environment and using the opportunities that appear in the surroundings.

The entrepreneurship of individual organisations and entire societies is largely determined by the surroundings, especially those of sociological, cultural and political-legal nature. Superimposed upon this are macroeconomic and international factors related mainly to the processes of economic globalization.

Referring to entrepreneurship in the context of establishing new market entities, some attention should be focused on its selected types. A.K. Koźmiński (2004) proposed a division based on two criteria: organizational-legal form and the type of inspiration, understood as a stimulating factor. Based on these criteria, he distinguished individual, internal (corporate) and family entrepreneurship.

S. Kwiatkowski (2000) was the first to introduce the concept of intellectual entrepreneurship which means creating the basis for the material wealth of individuals, social groups and nations from intangible wealth (intangible knowledge). An intellectual entrepreneur's competitive advantage is based on the knowledge possessed and the independence based mainly on that knowledge, reinforced by market leadership. One of the main features distinguish the operation of intellectual entrepreneurs is their ability to perceive the social determinants of business activity and creatively resolve unavoidable interpersonal conflicts. Intellectual entrepreneurship develops in two ways:

- through commercial implementation of previously unimplemented undertakings,
- through intellectual valorisation of typically economic actions and organisations.

In addition academic entrepreneurship, intellectual entrepreneurship also includes technology entrepreneurship which will be discussed more extensively further on in the present article. It manifests itself in the establishment of new market entities for commercial implementation of technology, especially advanced technology. Intellectual entrepreneurship is nothing but a broader understanding of knowledge entrepreneurship. Technology entrepreneurship focuses on activities aimed at a more effective combination of the potential of Higher Education Institutions (HEIs) and Research and Technology Organizations (RTOs) with the market and business activity. This involves among others ensuring optimum conditions for the commercialisation of research results and their implementation in enterprises thanks to the effective cooperation of the science and the business sector.

According to G. Banerski et al. (2009) "technology entrepreneurship is a tool for transforming the research and potential of research organisations into products and services, which directly or indirectly

benefits consumers and causes quicker economic growth in the future. As a result, new knowledge is transferred to private enterprises which increases the productivity and as a result leads to the establishment of new firms, increases investment and employment, also in the high-technology sector".

W. Grudzewski and I. Hejduk (2008) on the other hand state, "technology entrepreneurship is a process of creation of new products, application of modern technologies, flexible reaction to changes raking place in the marketplace, as well as implementation of innovation into all of the areas of company operations, as well as its cooperation partners".

Modern and especially advanced technology plays a key role among the determinants of technology entrepreneurship. It was not without reason that M.E. Porters called technology "the great market equalizer". It represents a combination of knowledge, skills and experience that allows for the utilisation of scientific research discoveries in order to commercially implement them and giving them utility, providing added value for the customer and hence also the enterprise. Technology entrepreneurship relates particularly to those sectors that are classified as technologically advanced. Table 1 presents the classification of high-tech sectors and products according to the European Classification of Activity and NACE.

Table 1. Classification of high-technology areas and products according to European Classification of Economic Activities and the OECD

High-tech industry sector classification according to NACE developed by the OECD	OECD Classification of high-technology products
Manufacture of air and spacecraft and related machinery	Aircraft and related equipment, spacecraft (including satellites) and spacecraft launch vehicles and their parts, non-electrical engines and engine parts
Manufacture of office machines and computers	Typewriters and word processing equipment, optical photocopiers, contact copiers or thermo copiers, automatic data processing machines (computers) and parts and accessories (excluding covers, cases, etc.)
Manufacture of radio, television and communication apparatus and equipment	Image and sound recording and reproduction equipment printed circuits, fiber optic cables, electronic tubes, diodes, transistors and other semiconductor devices, electronic integrated circuits and microchips, piezoelectric crystals, microwave lamps, etc.
Manufacture of pharmaceutical preparations, medical chemicals and plant-based preparations	Antibiotics, natural and synthetic hormones, glucosides, antiserums and vaccines; medications containing antibiotics, hormones and other medications not specified in this classification

Source: own work based on (Wysokińska, 2001).

It should be kept in mind that this classification if frequently theoretical and the boundaries between highly and mid-advanced technology can be blurred. This is e.g. the case in the chemical industry and market. Certain chemical materials and products are classified as high-tech (specialised elastomers or certain conducting, liquid-crystal and thermo- and chemo-resistant polymers), while others as medium high-tech.

Enterprises usually possess not single technologies but rather a specific technology set (portfolio). This is the key, though not only component of enterprise technology potential. Technology potential is something more than an enterprise's technology portfolio. In order to stimulate competitiveness enterprises should not limit themselves to just the technologies they possess. It is desirable to present technology potential in a broader perspective that also includes R&D activity, its effectiveness and efficiency; the employees' creativity and entrepreneurship, their key abilities and competences and predisposition toward learning and technology change. The key determinants are presented in Figure 1.

Figure 1. Determinants of enterprise technology potential
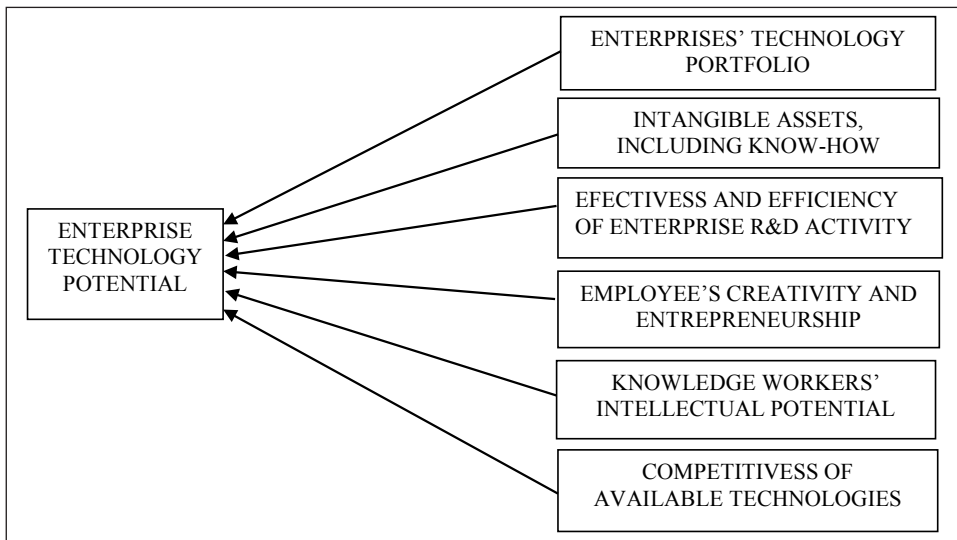
Source: (Chyba, 2014).

Technology potential is sometimes classified as a component of an enterprise's competitive potential. There is also a clear interdependence between technology potential and enterprise competitiveness.

Technology entrepreneurship is strongly dependent on both factors of the general and objective surroundings and on the organisation's internal environment and in particular the enterprise's organisational culture and its clarity. This will be presented more extensively f8rther on in this paper during the discussion of this dependence model.

3. Enterprise competitiveness

Enterprise competitiveness as a measure of their effective rivalry on the market is a multi-aspect concept and requires considering numerous parameters and determinants. It leads to the establishment and longest-possible maintenance of competitive advantage. Possessing a competitive advantage in at least some aspect of operations is in fact a condition necessary for the survival and further development of an enterprise. Currently management theorists and practitioners emphasize primarily its sources,

such as key competences, distinctive abilities, or strategic resources. The views of the resource-based school of strategic management have successfully supplanted the postulates of the position school which emphasises the key role of the enterprise's current position on the market (within an industry or niche). According to the currently dominant opinion, a high market position may result from a former advantage which does not necessarily have to apply in the future as well. The literature gives numerous definitions of enterprise competitive advantage. Competitive advantage can be described as a specific advantageous market situation in which an enterprise outperforms competitors in terms of key competences, resources, quality of products or the level of added value for the customer.

The next problem is the issue of measuring it. The most popular measures of competitive advantage are market share and profitability. It is becoming more common to use other enterprise output measures such as customer satisfaction and loyalty since they are a direct reflection of the customers' reaction to the position advantages achieved on the market and can thus serve as lead indicator of changes in market share and profitability. The reason behind using market share as a measure of advantage is the ability to distinguish winners from losers by indicating the proportion in which they divide the market, i.e. the proportion of transactions and sales levels. It is mostly an indicator of past, and not necessarily future, competitive advantage. This is because it is in fact only an indicator of past results.

The profit level achieved is the outcome of the cumulative competitive advantages of past periods taking into account the investment outlays made Since an enterprise's profitability is determined by a number of actions performed in the past, it is not a accurate indicator of current advantage. When an enterprise's surroundings are unstable, this indicator can be misleading. High profitability may be achieved by cutting investment in renewing the enterprise's strategic resources and therefore undermining its chances of long-term competitive advantage.

Neither profitability nor market share are ideal measures of competitive advantage. This is due to the fact that, first of all, their high level does not necessarily signify that an enterprise actually possesses a competitive advantage and second of all, even if it does, this advantage can only be considered in a static and not dynamic context, i.e. without the ability to predict the duration of the advantage. The indicators' effectiveness increases when they are used together.

Customer satisfaction is "customers' positive or negative emotion in connection with the value they obtain from making use of a given product offer in a specific situation. This may be a direct reaction to use of the product or an aggregate reaction to a series of experiences". As a rule, enterprises don't use just one tested customer satisfaction measurement method but rather a set of measures and methods selected based on their specific type of activity. The ones that achieve the best effects are those that use several mutually complementary methods. This is because each method provides different information about the customers and their level of satisfaction. All such information may be important to the enterprise and provide the basis for improving products in order to provide customers with the value they desire and perpetuate their own competitive advantage.

Customer loyalty can be defined as "the degree to which consumers consistently maintain their positive attitude toward a product, enterprise, purchase location and demonstrates a desire to purchase it in spite of economic arguments in favour of purchasing a competitor's product". In order to be a credible metric, this loyalty must be true and not false. The concept of true loyalty refers to the customer adopting a certain position with respect to the purchased product or its brand which is due to an attachment which is expressed as a feeling to duty to re-purchase that and not another product, which is not the case with false loyalty. This type of loyalty manifests itself in repeat purchase of the product being made as a result of the passive attitude of the buyer who is liable to alter the purchase decision based on favourable economic stimuli. Loyalty indicators

seem to be the optimum market measure of the durability of competitive advantage since they serve as the basis for making reliable predictions of the chances of maintaining the advantage in the future.

4. Technology entrepreneurship and enterprise competitiveness – construction of an interdependence model

There is a connection between technology entrepreneurship, its determinants and expressions and an enterprise's competitive position on the market. Technology entrepreneurship is determined by an enterprise's environment, and especially organisations that support the effective and efficient commercial implementation of new technology solutions. An important role is played by the internal environment, including the organisation's specific characteristics and identity expressed in the organisational culture developed, as well as intellectual capital with particular emphasis on human capital.

A distinction should be made between the technology potential of an enterprise with its current technology portfolio (set) and its potential to develop new technology through the work of its R&D department and creativity of its workers. Figure 2 shows a proposed model of the interdependences between these values.

Figure 2. Model of interdependence between technology entrepreneurship determinants and the factors determining enterprise competitiveness
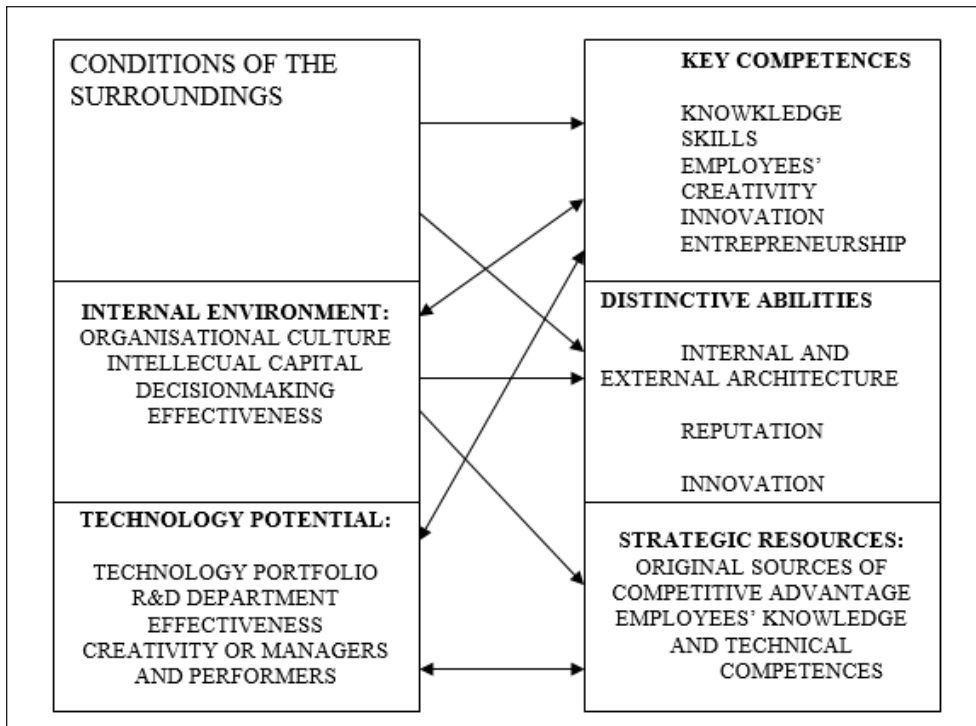
Source: own work.

In accordance with the principles of the resource school which is currently dominant in strategic management, enterprise competitiveness is expressed primarily through the organisation's key competences, unique skills and strategic resources. The above statement omits the conception of advantage resulting from the enterprise's current market position since this is more an expression of past rather than present or future competitive advantage.

Figure 2 presents the main dependencies between the determinants of technology entrepreneurship and enterprise competitiveness. With respect to conditions of the surroundings, the relationship is practically unidirectional. Out of the many factors of the enterprise's general and objective surroundings those that particularly support the proves of new technology solution generation and implementation have been highlighted. These have a specific influence on the enterprise's relationship with its surroundings which J. Kay referred to as the enterprise's external architecture. In addition, they also impact an enterprise's innovation level and its reputation.

In the case of the internal environment, the relationships with the determinants of competitiveness are bidirectional to a greater extent. This is particularly true of creating key competences within the enterprise. The most significant of the internal conditions determining technology entrepreneurship development are intellectual capital, organisational culture and experience of the managers and performers. The "soft" aspects of management, and specifically organisational culture and enterprise intellectual capital, are important sources of inputs into the enterprise's strategic resources. The following elements can be considered the technology pillars of entrepreneurial organisational culture:

- willingness to implement technology (innovation),
- freedom to implement it,
- ability to implement technology (innovation),
- undertaking actions aimed at technological development.

In the case of technology potential, these relations are typically bidirectional and to a large extent symmetrical. Research and development effectiveness and efficiency and the creativity of the employees – both managers and performers – are important sources of the enterprise's key competences and strategic resources. At the same time, the competences and resources possessed by enterprises are a significant component of their technology potential. It is, after all, difficult to build an enterprise's technology potential without the appropriate knowledge of the staff, their technology competences or creativity and involvement.

Analysis of the three identified levels of determinants shows a gradation of the character of their impact, from a unidirectional relationship with the surroundings through a certain level of bidirectional relationship with the organisation's internal environment to a typically symmetrical bidirectional relationship between technology potential and enterprises' competitiveness in all its various dimensions.

Technology entrepreneurship development barriers can be either institutional or mental in character. They are due on the one hand to constraints of the legal-political and economic surroundings and on the other are determined by cultural and sociological factors. The residents of each country or region are characterised by a specific type of entrepreneurship conditioned by history, culture, religion or even determined by local or family tradition. The scope of the present paper makes it impossible to discuss this issue at length and the existence of these factors must be assumed.

Presently, technology entrepreneurship is strongly influenced by the economic slowdown or recession of the past several years. Under such conditions, especially in the context of sustainable enterprise and economic development, the criteria for innovation development and implementa-

tion must be re-evaluated. In line with this, any innovations introduced in the enterprise or on the market must not only fulfil their economic role of generating a profit but also fulfil a social and environmental-protection function. This means that technology entrepreneurship should also fulfil objectives in line with the sustainable enterprise development concept. In times of crisis this is particularly difficult due to the higher levels of uncertainty and risk of enterprise operations. Environment-friendly technologies that also directly promote social objectives frequently do not meet the requirements of economic effectiveness. Taking the above into account, it must be stated that technology entrepreneurship is strongly dependent on these conditions and new economic development ideas. They must be taken into consideration in any discussion of technology entrepreneurship.

5. Conclusion

One of the key factors determining enterprise innovation and international market competitiveness is technology entrepreneurship. Technology entrepreneurship consists of both the creative behaviours of individuals and the capital and resources of the organisation. The present paper attempts to present a model of the interdependence between the determinants of technology entrepreneurship and the main factors promoting enterprise competitiveness. The following conclusions have been reached:

- the enterprises' surroundings, which can to a large extent be treated as a given, play a large and unidirectional role in determining enterprises' key competences and distinctive abilities,
- in the case of the internal environment, this relationship is partially bidirectional, especially with respect to the key competences,
- the relationship between technology potential and enterprise competitiveness exhibits the highest level of bidirectional character,
- technology entrepreneurship development barriers are due to both factor related to the mentality of specific individuals and political, legal and economic factors characteristic of a given country or region,
- the conditions of the economic crisis coupled with the idea of sustainable economic development have led to a significant re-evaluation of individual organisations' technology entrepreneurship priorities.

In summary, the interdependence between technology entrepreneurship and enterprise competitiveness is subject to strong dynamics of change resulting from uncertainty, increased risk, and economic conditions in the context of strong links resulting from the globalization of the world economy.

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19

Paradigm Shift in the Established Way of Thinking in Innovation, the Operation of and the Provision of Funds for Company Information System as a Result of the Transformation of ICT into the Services Sector

Milena Tvrdíková

1. Introduction

Intensifying globalization creates new and dynamic markets. At the same time, competition and the possibilities to compete are increasing. The basic aspect of working with Information and Communication technology (ICT) is mobility and individualization of application devices, which is especially required by the young generation. The aim is that everyone gets only what they need without having to invest unnecessarily. Increased flexibility and adaptability of ICT infrastructure has become commonplace. IT managers of companies and institutions require vendors to provide a permanent and stable system performance with a high degree of adaptability. The impressive development of information technologies (IT) rapidly accelerated our lifestyles. A new approach to business and its support for ICT accelerated the transition of IT companies from license sales solutions on providing innovation, administration and maintenance of information systems (IS) in the form of cloud computing (CC). CC is therefore among top priorities.

The CC is a modern outsourcing alternative that plays a significant role for many business sectors in achieving their ambitious goals.

However, CC is not the answer to everything. The prerequisite of a successful solution is the preparation of a business-oriented cloud strategy. Companies must identify the fields of business and processes where cloud computing performs better and how to properly launch the transition to new technologies. They must prepare the transformation readiness assessment into CC. It is based on a detailed analysis and sound selection of applications and processes for migration (Fig. 1).

Cloud strategy and the way to its introduction are implemented through a transformation process.

Figure 1. Cloud Readiness Assessment
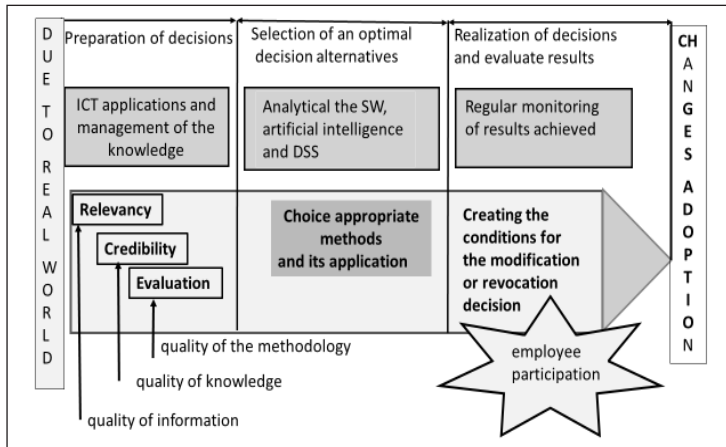
Source: own work.

IT solution vendors are experiencing similar changes. As a result of the transition to offering shared CC services, their business strategy changes. This involves a change in their organizational structure and the roles of the individual employees in delivering the product. Often is change rules of management their firm. The CC has an impact to safety, compliance with standards, rules and the law, and IT infrastructure of both partners.

Network services are in dynamic development. Thanks to social networks, we create huge amounts of structured and non-structured data every day, both in the corporate environment and beyond. Business conducted through mobile technology is becoming commonplace. Automation and robotics also changes the lifestyle of companies. There are significantly increasing demands on IS security into around the world.

2. Problem formulation – theoretical basis

Current trends in ICT have a significant impact on the efficiency and type of organizational structure and staffing in companies and institutions. It is impact of the development of dynamic network services.

There is increasing pressure on management flexibility and the possibility to work with an adjustable ICT architecture. To ensure the necessary flexibility in management, managers require an integrated information system, which has to be dynamic and contain the necessary functionalities to different extents in different time-periods. The CC services increase company flexibility and have a positive impact on its production and competitiveness.

There are many definitions of CC technologies by different authors and official sources. The paper contains only a few, because the number of ICT services is increasing.

National Institute of Standards and Technology (2011) defines CC as "a service model that enables instant, easy and on-demand network access to a shared supply of configurable computing resources that can be provided with minimal administrative costs and the need for coordination with the provider of these resources". This definition is used in this paper, because the basic characteristics of cloud computing can be deduced from this definition.

2.1. Importance of CC for Europe

Europe is giving to services cloud computing a lot of attention. One of EU's priorities is the need to develop an EU wide strategy on cloud computing.

In 2010, the Commission Digital Agenda for Europe was set up to address this issue. In this context is need to ensure, to be maximizes the benefits from cloud computing for Europe (*Euro-Cloud…*, 2016).

Focus on the use of natural resources, especially energy savings. In area of public procurement, the Commission will engage with public-sector partners in the Member-states and at regional levels to work on common approaches to cloud computing.

As the Commission reports, work has already started in some of these areas, including a public consultation in 2010. In its July 2016 Communication "Strenghtening Europe's Cyber Resilience System", the European Commission committed itself to develop a proposal for a European ICT security certification framework. Following this commitment, on 24 April 2017, the EC together with the European Network and Information Security Agency organised a consultation <u>Workshop on a European ICT security certification framework</u> with industry representatives and experts from the Member States.

The Government of the Czech Republic pays particular attention to the transition to cloud services, too. One of the tasks for the Ministry of Interior is to submit to the Government the national cloud computing strategy with an outlook at least until 2020. Now, the development of the strategy is in its second phase (2017-2019).

2.2. Role of cloud computing in companies

For effective management of corporate and external resources, most companies today use complex integrated information systems – ERP systems. ERP systems integrate most of the business processes, especially those concerning manufacturing, economic management, accounting, human resources, logistics, warehouse management, property management, distribution, marketing and management evaluation. ERPs have a modular structure and vary in their content and scope, depending on the scope, content and the resulting needs of individual companies.

A very actual trend in the companies of ICT vendors and customers is the transition of their IS to cloud computing as one of the possible forms of ICT services.

3. Transition of companies to operating ICT as a service

3.1. Demands on vendors of IS solutions as a shared service

Managers of buyer firms emphasize the requirements for shortening the delivery times and budget reductions for IS innovation. Next requirement is reduction of complexity of mutually integrated systems. There are also growing demands on the mobility of solutions. Users today own a whole range of mobile devices that want to use in management. Given the possibility to run applications anywhere, it is necessary that the integration of these devices is defined by standard interfaces.

At the design stage, pressure is often placed on vendors to use innovative approaches such as agile system development, prototyping or extreme programming. This is due to requirements to accelerate supplies of solution.

The possibility of real-time data analysis is one of the most important elements of the new generation of ICT infrastructure. Analytical tools integrated into network equipment allow recording the events on the network, monitoring its performance and detecting any anomalies. This results in a much more effective protection against possible attacks, as well as the possibility to optimize the network in real time.

The nature of the above requirements leads to the decision of IT companies to use shared CC services for the requested innovation of their customers' IS. Such solutions can support business processes of multiple customers efficiently, with a minimum of customization.

The vendor needs deal with the transition to CC in cooperation with managers of buyer firm (information about the possibilities of current ICT, the availability of human and financial resources, know-how, etc.).

3.2. Requirements concerning transition to CC services for user companies and organizations

The decision to transform part or whole company IS into CC will also be significantly affected by organizational and human resource set-up in the user company. A number of decisions on the use of ICT will fall within the competence of the persons responsible for business processes and within strategic management. This will require changes in the qualifications required from managers and many employees. Managers who will understand how to use ICT to create a new product or service and how to find new customers will become indispensable members of senior management.

When running CC applications, the number of technology-oriented specialists is likely to decrease in companies. It will lead to the reduction of the number of programmers and administrators. However, the number of employees responsible for the links between business and ICT services is set to grow. Their work will include defining ICT requirements, preparing and checking contractual relationships, SLA formulation, service delivery control, etc. These employees will don't are no longer likely to be working directly in the ICT department.

Although the company will buy a number of ICT services from external vendors, the total number of workers involved in the use of ICT in business will not decline. However, their qualifications structure will change (Ministr, 2013). These employees will need to focus on addressing issues concerning the relationship between business and ICT. How to use ICT to gain and keep a competitive advantage, how to use ICT to support the creation of new products or services, how to find new customers, speed up the company's response to external events and reduce the costs of business processes.

3.3. Benefits of transition to CC services for service users

The reason for the transition of interested users to CC services is a number of benefits they bring. They transition to shared services so that they could benefit from a profit and be able to operate more efficiently, faster, and with better planning. They can concentrate more on their core business, their mission or the tasks.

The most significant benefits are listed below:
- Payment for the scope of services according to the amount and scope of use.
- A change in the cost structure of the user.
- Service providers continuously assess usage services.
- Shared services relieve to the users long-term prediction.
- Operational and support activities are effectively delegated to the service provider.
- Cost transparency is greatly improved.
- Significantly lower prices than when buying licenses.

4. Legal aspects of shared services

Delegating specific activities to the service provider is also connected with the responsibility for ensuring their proper functioning and availability. This responsibility can also be delegated to the service provider within contractual relationships with the service provider. Contractual relationships typically involve Service Level Agreements (SLA). The user has to define precisely what specific requirements it has in that respect, what specific responsibilities it delegates to the provider. Agreements defines precisely the subject of the services to be provided and their functionality, possibly also the customer's objectives and expectations related to the shared services, together with the terms, warranties and sanctions in the event of non-compliance.

It is necessary to specify in detail the following:
- *Service scaling procedures* – possible expansion or reduction in the volume of services and the exact period for which services will be delivered – continuously, only on weekdays, at specific hours, etc.
- *Exact price of each service* and price change when scaling – change of scope of the services used. Important aspects also include the specification of the service level.
- *Ensuring connectivity* – if the network connectivity offered is directly secured by the CC service provider, or these services are provided by another entity. To define the procedure of handling of the failures of connectivity.
- *Personal data protection and the protection of data considered sensitive by the user* – the agreement between the user (that remains the data manager) and the shared services provider (that becomes the processor of personal data) must meet the requirements arising from the protection law of personal data. In addition, the user may require the provider to ensure specific protection of other data, which is sensitive from the user's perspective (business data).
- *The specification of the distribution of responsibilities between the vendor and the user* – the obtaining of information from the vendor on the legal status of the hardware serving to provide the services (ownership, maintenance, renewal, responsibility), as well as the specification of licensing terms for software which is used or provided within the shared services, including arrangements for cases where the provider is not software vendor.

5. Proposal of measures to achieve maximum effects in transition strategy to CC

This chapter contains the steps should be taken in developing a CC migration strategy in order to achieve the maximum expected benefits by its realization.

It is built on the experience and knowledge of IT companies that offer the operation of a comprehensive IS to enterprises and institutions. It is also based on the experience and knowledge of companies that have completed (more or less successfully) the transition of IS to the CC.

Author's experience with running ERP systems, especially Business Intelligence applications in the CC is applied in this section.

Initial stage of a draft project.

A default moment by trying to maximize the effects of the transition to CC, it is preparing a schedule of a gradual conceptual transformation of the overall IT architecture. In terms of management, this schedule is a strategic document.

Specification of requirements which will be crucial in the choice of contractor. Fundamental aspects mostly include: the time of delivery, the amount of cost, functionality, performance and complexity of the information system.

The specification should also include demands on the rate of mobility and alternatives of the required access to its implementation. At this stage, it is also necessary to specify possible requirements for real-time analyses and the management of computer networks.

Impact on structure of human sources which ensuring transformation.

More and more decisions about the use of ICT will move to the competence of the owners of business processes and the strategic management. This requires changes in qualification requirements of the staff. The position in the organizational structure is changed by managers who received training and proved their abilities. The qualification structure of employees should be changed. These selected employees will attend all CIO team meetings about trade strategy and marketing strategy. Employees are trained in skills supporting the use of ICT in the company – how to use ICT to gain a competitive advantage, create new products or services, find new customers, speed up the company's response to external events and reduce the costs of own business.

The choice of payment method and preparing the changes in the cost structure of the company.

When using shared services, the investment component is eliminated and only operational expenditures remain. This results in the following additional advantages.

This part concerns the choice of payment method and preparing for changes in the cost structure of the company. When using shared services, the investment component is eliminated and only operational expenditures remain.

A budget is to be prepared in consideration of the changes in the cost structure – *linearization of costs*.

Predictability of costs – by eliminating the capital component of cost, customers' costs become much more predictable. It also enhances their "output" character, which can be linearly dependent on the rate of consumption of the services used.

Measuring consumption – one of the benefits for customers is that shared service providers continually evaluate the utilization rates of their services so that they can charge them correctly. Unless a flat fee is charged, the provider measures (time spent using the application, the number of transactions carried out). The users get a good overview of what their employees are doing and how they are doing it.

The possibility to easily track the costs of each IT agenda – if costs were spread between capital and operating costs, the calculation usually did not include the costs of each programs. Thanks to the manner in which shared services are charged, it is now very easy to get a detailed overview of the costs of individual IT agendas, which leads to a significantly improved transparency of costs.

Usage of CC has only one logical component, representing the actual use of the services. Managers do not need to plan exactly how many employees they will have in a year or more. The scability of shared service offers them a size of IT accordinelly to needs.

Document is to be drawn up on contractual relations with the service provider.

Based on the previous steps, a document is to should drawn up on contractual relations with the service provider and SLA. Specific requirements and responsibilities are delegated to the provider, under what conditions, with what guarantees and also with what sanctions in case of non-compliance.

The specification of the contractual relationship is focused:

On the provision of services (subject, functionality, objectives, expectations), service scaling (change of scope, quality, time of provision), providing connectivity (connectivity provider, connectivity downtime). The protection of personal and other sensitive data from point of view the company, the division of responsibilities between the company and the supplier, the legal status of physical equipment used to provide services. Software licensing terms, conditions of system migration and required customization.

6. Conclusion

The boom in information technology, started in the late nineties and successfully continued into the new millennium brought on acceleration of our lifestyles to entrepreneurship. The catalysts affecting the global population are: development of new technologies, globalization, increasing importance of access to relevant information, and mobility demands. Intensive globalization creates new and dynamic markets, possibilities to compete. New forms of firm management should be sought.

The management requires flexibility and information sources for the support of decisions. ICT technologies also develop rapidly. In order to keep the quality of management on the top level, it is necessary to exploit all the features of actual state of ICT. The use of CC is one way how to reach such a state.

The use of CC is one way how to reach such a state. It is necessary to work on a draft methodology for a managed innovation of company information systems, which respects the current circumstances given by the rapid development in ICT, and to help the users understand the possibilities of CC as an effective form of operating a enterprises IS.

Based on summary of literature knowledge and own skills from CC usage, the recommendations of the transition of a company or institution to CC are provided. The recommendations are formed with respect to the current state in firms and institutions. The complex of activities that have to be done in order to maximize the benefit from this transition is considered in the recommendation.

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Chapter **20**

The Innovation of Information Support of the Social Housing[1]

Jan Ministr

1. Introduction

The providing of social housing service for individuals and families living in socially excluded communities, is very important problem to solution in Czech Republic. Organizations that provide this social service, try to provide this service effectively, because they are mostly unprofitable with limited sources (Danel & Řepka, 2015). Transparent and clear description of the processes of providing social housing services and information flows is a necessary condition for ensuring the effectiveness of this social service. The paper describes the methodological framework for innovation of social housing service, which is based on the process approach and using of the object tools of modelling. Among the key tools of a methodological framework includes a description of the process using the "Process Cards" and UML diagrams. Competence job roles that provide the service activities are described using a simple competency model "RACI Matrix" and monitoring the performance of the service of human resources is performed by indicator of Full Time Equivalent. The experience of implementation this methodological framework will be illustrated on provision of social housing services in Ostrava city.

The offer of service of social housing when the target group of this service are individuals and families living in socially excluded (mostly Roma) communities in Czech Republic is based on *Three-stage concept of housing*, where:

- *1st stage* of housing represents a housing with a *rental agreement*;
- *2nd stage* of housing represents a (social) housing with a *sublease agreement* (usually for fixed period);
- *3rd stage* of housing represents housing in substandard housing apartment or other unsuitable premises (bad hostels, overcrowded and hygienic faulty flats).

The innovation of social housing service has been focused:

- to ensure effective operation of social housing service in the 2nd stage of housing for socially excluded communities;
- to create conditions for the successful transition of the target community from 2nd to 1st stage of housing.

Organizations that provide social housing, can generally characterized by the following properties (Cimbálníková, 2009):

- they specialize in a particular type of customer;
- they doing business in a particular geographical area, which is due to low social status of the population;
- they have limited financial resources;
- they characterized by more staff turnover.

These features are crucial for defining the organizational structure of the department and its effective management (Ministr & Pitner, 2014b). The main requirements should include the next characteristic:

- applying a process approach when the process is described on the basis of clearly defined activities, corresponnding job roles and indicators of their performance;
- clear definition of the competencies of individual job roles within the process;
- creating a simple and clear organizational documentation to facilitate the rapid incorporation of new employees to easily understand what to do and what are responsible.

Author of the contribution based on the above characteristics and requirements of the organization that provides social housing, have created a methodical framework that tries to meets the given requirements and business conditions.

2. Methodological framework

In view of the small size of the organizations that provide the social housing service it was necessary to choose appropriate tools and procedures of process oriented solution. Process-oriented framework for the provision of social housing services is based on:

- Process Model,
- Activity Diagram,
- Simple Competency Model – RACI matrix,
- Monitoring of Process Performance by FTE (Full Time Equivalent).

2.1. Process model of social housing service

The process model of social housing service has been derived from the live-cycle of provided service as shows Figure 1. It is formed from three basic stages: Initial of social housing, Management and administration of social housing and Termination of social housing.

Figure 1. Decomposition of live-cycle the providing the social housing service
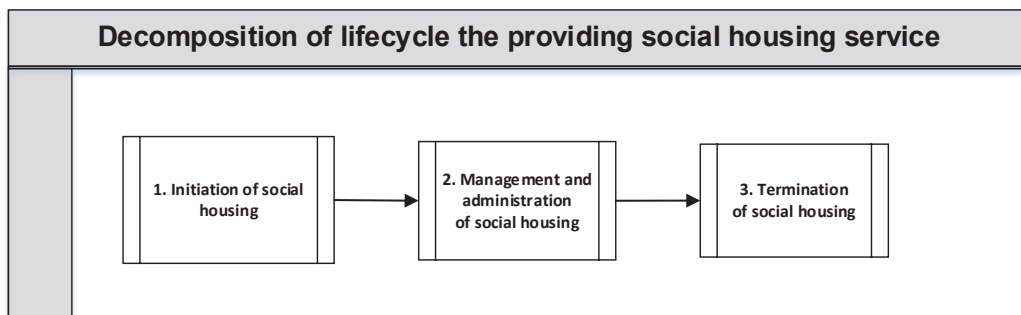
Source: own work.

These groups of sub-processes have been subsequently decomposed into less complicated processes. All identified processes must be described in cooperation with top management to achieve decomposition of strategic objectives of the organization into individual sub-processes. The basic description of the process consists of (Danel, 2012):

- *Objective of process* that represents why is given process used and what the management wants to achieve.
- *Added value*, which is a form of fulfilling the objectives of the process.
- *Customer of process* that represents the subscriber of the process, it may be e.g. a different organizational unit, individual customer, other company.
- *Process owner*, who is the employee who is responsible for the entire running of the process for its correctness and accuracy.
- *Key inputs* that represent all the inputs needed to start the process, these inputs can be physical nature (eg. raw materials, semi-finished products, etc.) or immaterial (data, decisions, etc.).
- *Key outputs* that represent what is the product of the process that created by its performing (product, service, written submissions etc.).

Processing of "Process card" for every process extends the basic description of the process of the following characteristics (as Fig. 2):

- *Key legislation* related to the process.
- *Main products* that are used within the process.
- *The sequence of activities (*basic process steps which are a base for Activity diagram creating).
- *Basic characteristics of individual process operations* (responsibility of employees, the importance of the activity for an organizational unit: key or supportive, the time duration of activity, Activity mode: continuous, seasonal, gusty).
- *Basic indicators (metrics*) process (incidence, FTE, performance indicators and quality).
- *Cooperation organizational departments* in the running of the process activities.

Figure 2. Structure of process card

Name of process	1.1 Acquisition of clients	
Objective of process	Obtaining a potential client for mediating social housing	
Added value	The transferred information - Housing offer	
Owner of process	Coordinator of the key activities	
Customer	Executor of process	
member of target group	Coordinator of the key activities	
Key legislation	188/16 The draft law on social housing and the housing allowance	
Inputs	Outputs	
Impulse from service organization	Forwarded social housing offer	
The fundamental products used within the process		
	WEB pages, Facebook, phone communications, leaflet	
Description of the process		
Coordinator of key activities forwards information about social housing to potential clients.		
Definition of the steps of the process		

1. The coordinator based initiative arising from the service organization processes the information about the offer of housing, which sends out:
  1.1 Social departments of the city;
  1.2 non-profit organizations, state bodies and institutions in the city.
2. The coordinator processes the answers to possible direct questions of potential clients.
3. The coordinator communicates with potential clients of social housing through WEB, Facebook, phone, leaflet.		

Trigger events	Closing events	
The creation of impulse from service organization	Distributed information about social housing	
Metrics		
The frequency of occurrence process	20 to 30 impulses per month 1 update WWW and facebook per week 50 phones per week	
FTE (the share of the total labor fund)	0,3 FTE per day	

Source: own work.

2.2. Activity diagram

Activity diagram is useful diagram that clearly describes dynamic aspects of the sub-process. In our case it used to visualize the running of individual activities within the sub-processes. The usage of swimming pools for individual job roles increases the ability to understand the logic of the process for employees as shows Figure 3.

2.3. Simple Competency Model – RACI matrix

The use of RACI matrix is a simple form of creating the competency model (Motschnig & Pitner, 2014). Responsibility matrix RACI is the method used to assign and display responsibility of individual job roles in an activities of process of the organization, as you can see on Figure 4. RACI is an acronym of the first letters of words (Bucksteeg, 2012):

- *R – Responsible* (who is responsible for the execution of activity or subprocess).
- *A – Accountable* (who is responsible for the activity or subprocess, he is responsible for what is done).
- *C – Consulted* (who can provide cost advice and consultation to the activity or subprocess).
- *I – Informed* (who should be informed about the progress of a activity or subprocess and assignment decisions).

Figure 3. Structure of process card
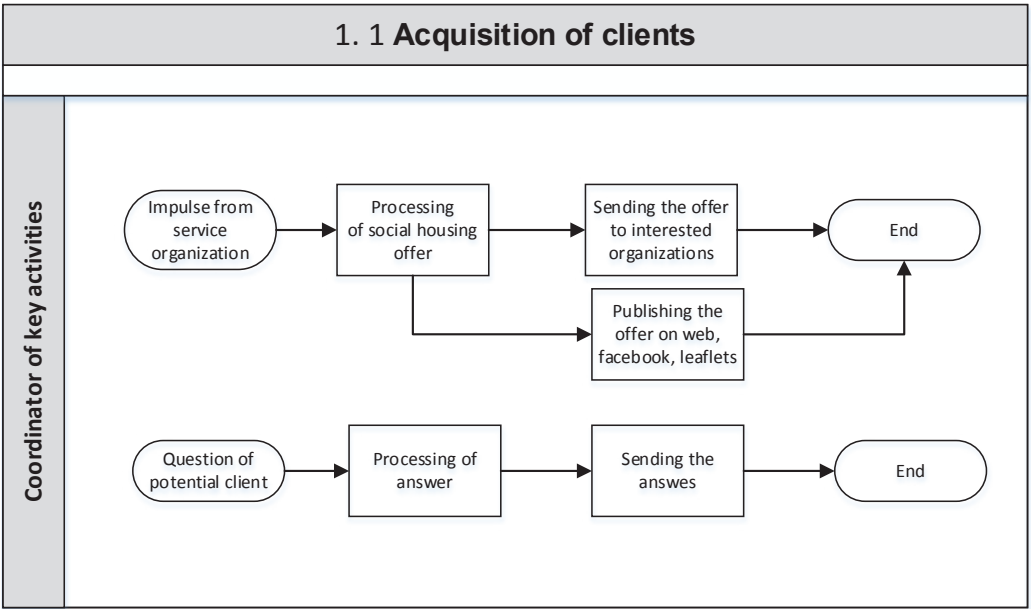
Source: own work.

Figure 4. RACI Matrix

1.1 Acquisition of clients	Coordinator
Processing of social housing offer	A
Sending the offer to interested organizations	A
Publishing the offer on web, Facebook and leaflets	A
Processing of potential client answer	A
Sending the answer to potential client	A

Source: own work.

2.4. Monitoring of process performance

The main problem of administrative processes measuring is a correctly set of indicators for each process which would be derived from goal of process and its added value (Doucek, 2010). Using of Full Time Equivalent in processes brings for managers many advantages when they can to compare use of working time particular clerks which working in another processes in the same manner (Ministr & Pitner, 2014b). FTE represents the available working fund given to type of working role

that is subsequently assigned to particular working activities of processes. Exploitation of working type role (source) can be to determine as:

$$v_i = \sum_{j=1}^{n} \frac{c_{ij}}{FTE_i} \tag{1}$$

where:
i – type of source,
v_i – exploitation i^{th} type of source,
j – number of process activity,
n – number of process activities,
c_{ij} – time allocated on j^{th} process activity executed by i^{th} of source,
FTE – Full Time Equivalent of ith type source.

Using FTE as indicator of process performance is supported by the excel tables and graphs, as shows Figure 5.

Figure 5. Use of employee working time
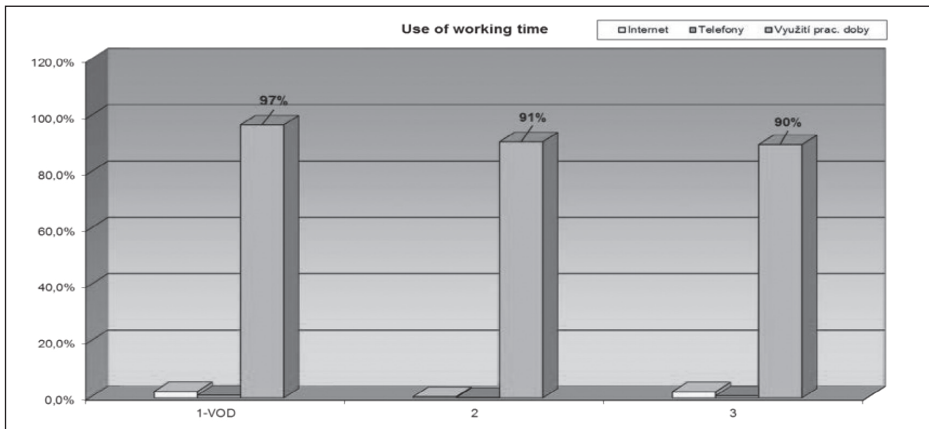
Source: own work.

3. Experience from the implementation of the methodological framework

Author have been implemented above described methodological framework in project that has next characteristic:
- The methodical framework has been implemented and verified in Ostrava city in organization which provides social housing services.
- Given service began to be provided from September 2016.
- Social hosing use approximately 400 users in 400 social flats.
- The operation of this service is in charge of a working team that has 8 members and their workload is typically in the 75 to 90 percent of disposable FTE.

- The target value of use this social housing service is 600 users.
- Management of the organization by using a process model in association with the monitoring of employees found out that the increase in the number of users of the service will also require staffing increases. Specifically, about two Case managers and two Field social workers.

4. Conclusion

Descripted methodical procedure leads employees of organization to process management of work and thus higher work efficiency and quality of social housing operating.

Other advantages of this methodology is clear and understandable definition of the competencies of individual job roles within the individual sub-process using RACI matrix.

Process card together with a Activity diagram accurately describe the sequence of activities assigned to individual job roles within the sub-process and forms the basis for high-quality processing of job descriptions when an employee can easily understand what has in fact do.

The monitoring of employees using the FTE facilitates their transparent and fair financial evaluation.

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Chapter **21**

The Effectiveness of Managing a Franchise Network in the Cross-Sectional View of the Main Theories of the New Institutional Economics[1]

Jarosław Plichta, Karolina Orzeł

1. Introduction

Transaction cost economics deals with the analysis and modelling of the processes of exchange and management with the participation of market entities, considering relationships between them and the conditionings of the existence of such costs within the hierarchical structures of firms. In addition to production costs, they are a premise for the analysis of the reasons for the ineffectiveness of entities' behaviours in the institutional environment. The effectiveness criterion is an incentive to act in the processes of taking economic decisions concerning the optimum, in given conditions, form of the transformation and allocation of resources and the exchange of values. Due to the necessity to win and exchange limited resources, entities participating in it create competition and cooperation strategies ensuring them to achieve the intended goals with the minimum engagement of own resources or, having limited resources, to maximise their goals (Ziębicki, 2014). This deterministic mechanism built on the hierarchies of values of the entities to the exchange is the transaction cost centre. The reduction of transaction costs is possible via the institutional environment and various forms of the organisation and management of resources within the firm's structure, as well as various forms of cooperation constituting indirect, hybrid forms of the coordination of exchange processes. They may have a character of vertical, horizontal, lateral and network connections. They can include, for example, consortia, cartels, joint ventures, purchasing groups, licence cooperation or franchising. The structure of each of the aforementioned manners of cooperation is justified from the point of view of transaction costs, agency costs or the costs of the ownership rights transfer, constituting the main theoretical approaches within the New Institutional Economics (NIE).

This paper discusses the problem of franchise relationships, as one of the fastest-developing in recent years, not only in Poland, cooperation forms in terms of the sales of products and services in the value creation chain. Relationships between parties are usually regulated by formal

arrangements of incomplete (relational) contracts with multiple entities. The dominance of one central entity (the nod) and formal independence of the other entities to a great extent determine the network character of such structures (Czakon, 2009b, 2009a).

The cradle of franchise networks is in the United States where franchised businesses operated over 801,000 establishments in the United States in 2016, counting both establishments owned by franchisees and franchisors. These establishments represented 2.3 percent of all nonfarm business establishments in the United States. Franchised businesses directly provided nearly 9.0 million jobs, met a $351 billion payroll, produced $868 billion of output, and added over $541 billion of gross domestic product ("GDP"). Franchised businesses directly accounted for 5.6 percent of all private nonfarm jobs, 3.8 percent of all private nonfarm payroll, 2.8 percent of all private nonfarm output, and 3.4 percent of private nonfarm GDP in 2016. Franchised businesses directly provided a greater number of jobs in 2016 than all manufacturers of durable goods, such as computers, cars, trucks, planes, communications equipment, primary metals, wood products, and instruments (*The Economic…*, 2016).

Franchising emerged in Poland at the beginning of the 1990s. In spite of some changes undergoing in the economy, this business model is still valid, and the growing significance of the service and trade sector is the reason for which more and more entrepreneurs decide to adopt such a solution for their firms. The domestic franchise market is developing very dynamically, which is proven by the fact that the number of franchise networks in Poland, since the beginning of its existence, is on the increase (Antonowicz, 2007). Over the last ten years of the functioning of franchise agreement in Polish business trading, there was an increase of about 80 networks a year on average, with the lowest increase observed in 2006 (only 19 systems were established during that year), and the greatest one in 2010 (136 new systems were established) (Orzeł, 2016) – see: Table 1.

Table 1. The number of systems and franchised entities in Poland in the years 2006-2016

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
The number of franchise systems	329	405	517	626	762	845	942	998	1062	1114	1170
The number of franchise entities	23,131	25,654	30,634	37,982	45,202	53,392	57,490	63,482	65,984	68,460	71,000

Source: own study based on (*Raport o …*, 2016).

According to the latest report "Franchise Market 2016" prepared by a consulting company PROFIT System, there are 1,114 franchise systems on the Polish market, within which there are 68.4 thousand stores and service outlets. At present, franchising remains to be one of the fundamental paths of development for small firms and gives jobs to as many as 460 thousand people.

2. The basic premises of the application of the main institutional theories in the analysis of franchise relationships

The best-known concept within the NIE approach is the transaction cost theory (TCT), developed and popularised mainly by O.E. Williamson. The problem of transaction costs is connected with the imperfection of the mechanisms of exchange causing, according to K. Arrow, so-called frictions manifesting themselves in the costs of the operation of the market mechanisms. The enterprise concept, prevailing in economics for a long time, was based on the neo-classical view of management processes as manufacturing processes described by production functions. Production processes are still the cost centre, and therefore they constitute the main element of the economic analysis. However, the approach excluded the existence of other costs, primarily related to exchange processes, perhaps overlooking the costs arising from the comparative advantage in the international exchange.

This non-friction model of operation was not accepted, not only by the scientists but also by the economic practice (Hodgson, 2010). For more than a hundred years, various aspects of the ineffectiveness of the operation of market mechanisms and too restrictive assumptions of neo-classical economics have been indicated. The development of other scientific studies, such as sociology and psychology, as well as the achievements of numerous economists, e.g. those included in the institutional trend, such as T. Veblen, T. Clark, R. Coase, H. Simon or J. Commons created the bases for in-depth research, conducted in the second half of the 20th century, both macroeconomic, by, e.g. D.C. North, or micro- and meso-economic, e.g. by O.E. Williamson, the effect of which was the emergence of many research streams concerning transaction processes in economy (Carroll & Teece, 1999).

The transaction cost theory relies primarily on a few basic assumptions concerning the conditions in which economic processes take place and for which transaction is the basic unit of analysis. According to O.E. Williamson and other representatives of this approach, economic processes are a complex system of various types of transactions, taking the form of formal and informal contracts between entities. Depending on the characteristics of these contracts and factors influencing them, we can divide them into: classical, neo-classical and relational ones (Macneil, 1985; Ménard, 2000). Franchise agreements are usually relational contracts due to their individualisation and usually long or difficult to define performance date. Transaction costs related to the performance of such contracts are a derivative of the following factors (Williamson, 1998):

- asymmetry of information between entities,
- uncertainty having mostly behavioural grounds,
- opportunism of entities, focused on the fulfilment of their own interest and tending to hide, distort information in an aware or unaware way,
- frequency of transactions,
- specificity of resources being exchanged,
- limited rationality of actions.

These assumptions concerning the conditions in which transactions are effected are the basis for the creation of various relationships based on competition or cooperation. Cooperation requires the creation of dedicated structures of exchange between entities in vertical or horizontal systems with a various level of integration.

3. The mechanism of the formation of franchise relationships as a hybrid form of exchange

The problem of the vertical integration on the grounds of the NIE found a fertile ground only since the 1990s, due to the lack of any theoretical framework which was created only in the 1980s and concerned contracting (Klein, Crawford & Alchian, 1978; Ouchi, 1980) and transaction costs (Joskow, 1985; Williamson, 1979). The following years brought a number of empirical research and attempts to model this problem (Aoki, 1986; Grossman & Hart, 1986; Hodgson, 1998). The fundamental trend in these deliberations concerned bilateral and unilateral relationships in the relations between pairs of entities. The deliberations within that scope were conducted based on commonly existing forms of cooperation, including franchising, which from the very beginning of the development of the transaction cost theory occupied a prominent place as an object of analyses (Norton, 1988; Shelanski & Klein, 1995; Williamson, 1976). Due to a large number of entities, relationships in franchise contracts have the form of multilateral contracts, which, according to C. Menard, illustrates better the multilateral character of hybrid coordination structures (Ménard, 2004, p. 347). They are various forms of exchange and value creation chains based on transfer and combination of resources. The base for exchange processes are differences in the resources possessed by entities in terms of quantity and quality, and the wish to increase them. In contrast to the market exchange, where the exchange of readily available resources takes place, the factor which inclines entities to create various forms of vertical integration is the level of the specificity of resources, that is their capability of alternative applications (Ruzzier, 2009).

The possessed resources may be a cause of exerting pressure and the wish to gain control over other entities. The aim is to achieve even bigger resources from dependent entities by offering them at most the same value as they control. An increasing value of dominating entities can take place only through an increasing value offered by entities dependent on them. Therefore, entities possessing domination (power) will be striving for the rise in their profits by creating conditions encouraging dependent entities to organise themselves in such a way which will enable to increase the value of their own resources. According to Skinner, in this way they implement the idea of own interest (Skinner & Skawiński, 2013). It completes the motive lacking in the behavioural theory, inclining individuals with capital to engage other entities in the processes of the institutionalisation of exchange, e.g. franchising. The dominating entity is forced to conduct exchange which will be fair from its own point of view and from the points of view of the dependant entity. In spite of the domination, the dependent entity gains benefits from that by condoning conformism. In the situation of unbalanced relations between the parties, deprivation occurs and conflicts may arise.

Long-term strategies of building franchise networks are determined by the wish to strive for the return on investment in specific assets, e.g. brand building, a decrease in the problem of sunk costs and achieving the economies of scale and, in consequence, the reduction of marginal costs (Plichta, 2010).

The mechanism described above takes place in the case of franchise relationships, where, theoretically, we have the dominance of one entity (the franchisor) over numerous, usually small entities (franchisees). The exchange relationship consists in the mechanism of balancing potentials, basing not only on the asset valuation but also on mutual expectations as to the prospects for development. However, all the time there is a risk of the domination of one of the entities over another and this is one of important reasons for opportunistic behaviours. What is important from this point of view are the concepts formulated by Simmel (1997, pp. 40-49). He paid attention

to the mentioned values as a source of potential conflicts. He indicated that a value may change under the influence of individual feelings, their intensity, and social and cultural patterns. Entities may also subjectively strive for the creation of the impression of the rarity or/and unavailability of the object of exchange, thus increasing its value. Manipulating a situation in order to present falsely the need for a given good or to hide the availability of resources raises the level of tension in the exchange and may lead to a conflict (Simmel's tension principle). Such opportunistic behaviours are dictated by a willingness to gain greater benefits in the form of higher valuation of own resources, and thus obtain their higher value from the other party. It primarily concerns the ability of these resources to generate sales and the firm's development. In consequence, the derivative of this process is a franchise fee which should be a fair price ensuring effectiveness in Pareto sense. Due to the fact that is not easy to establish it, the negotiation process may by costly from this point of view. Its consequences ex post may be equally important to each party. The risk of opportunistic behaviours ex post are supposed to be reduced by the formalisation of the contract and its detailed provisions. On the other hand, too far-fetching formalisation of franchise contracts decreases adaptation chances and may bring about problems with fulfilling the contract terms and conditions.

The problem of resources being the object of a franchise contract also concerns the level of their complementarity and substitutability, which also affects their value. High complementarity creates possibilities to pool them and is the base for building permanent cooperation links. The problem of pooling of resources being at the disposal of parties to the transaction on the grounds of common ownership was developed by E. Ostrom in her output (*common pool resources*). According to her, the direct observation of the reasons for the existence of such forms is comparably lower effectiveness of alternative (comparative) structures of the market and hierarchical exchange. Specific resources possessed by the parties and opportunities to participate in profits resulting from their use are the most important stimuli towards integration (Plichta, 2008, 2012). The possession of specific resources by the contractor gives it the advantage of potentials. However, it stimulates the other party to opportunistic behaviours in order to balance the exchange. The aforementioned risk of sunk costs may also be a source of opportunistic behaviours of the investor focused on fast returns and minimisation of related risk. The risk arising from the possibilities of opportunistic behaviours of both parties is the source of the search for various forms of security, both at the *ex ante* stage of the franchise contract and at the *ex post* stage it generates costs influencing its effectiveness.

Additional sources of transaction costs are related to the creation of mechanisms and instruments securing the transfer of ownership rights. It concerns not only a trademark, a logo, a brand or visualisation but also know-how related to the implementation of business processes based on relationships with customers. The problem is partially solved by general frameworks and practice in applying different types of franchise systems being an institution enabling to reduced ex ante costs (Orzeł & Śmigielska, 2014). However, creating the contract framework may be costly due to the level of the adjustment of resources before and during the contract performance. It requires the creation of the mechanism of coordination during its design and execution. The coordination may concern quantitative agreements, e.g. the price, the number of staff. etc., and qualitative ones, e.g. the scope of training or image building.

In franchise contracts, the key element is not only resource pooling but also achieving additionally the resource synergy effect, which is indicated as an advantage of this form of cooperation over other forms of exchange, so-called *functional and cross market synergy* (Sidhpuria, 2009, p. 45). It forces cooperation at all stages of the management process and the division of tasks

between partners, which may result in the creation of idiosyncratic management structures requiring additional outlays. The parties to a franchise contract face, however, a lot of other limitations influencing the amount of transaction costs. We can include in them (Frazer et al., 2007):

- limited possibilities of the franchisee's development, due to the scope of management and its effectiveness in more expanded internal structures,
- the flat structure of the franchisee may cause limited capabilities of motivational activities, e.g. career for the sales staff,
- formalised and rigid system of the contract provisions may limit innovativeness, and thus poorly stimulate to act more,
- the postulated effect of resource synergy, and at the same divergent goals may be a source of benefits and conflicts.

The conflict may take place in the situation of rising differentiation of the resources accumulated in this way, more by the franchisor than the franchisee, e.g., the growing brand value may to a greater extent translate into the scale of operations of the franchisor than of the franchisee. It may increase opportunistic behaviours of the franchisee, and the expectations for greater benefits coming from the domination of the franchisor.

Some authors treat the formation of hybrid links as a kind of a cooperative game in the conditions of specific information (Forges & Serrano, 2013). Thus, it has some characteristics of agency problem due to the lack of the possibility of permanent control of the activities of the agent – franchisee. It may hide its intentions before the conclusion of the contract (*hidden intention*), and its behaviours upon its conclusion (*hidden action*). It is related not only to the information asymmetry problem, but they also result from the imperfection of the formal side of the contract and its flexibility during its term (Plichta, 2007). In spite of the information asymmetry existing in the franchise relationship, costs resulting from agency problem are a bigger problem for the franchisor than for the franchisee. It incurs costs of the monitoring of the agent's activities, e.g. by means of the anonymous customer method or obligations of detailed reporting imposed on the agent. Also ERP systems, provided by the franchisor, with the centralised structure of collecting data about all the entities in the network, as well as the systems of controlling various areas of the franchisor's activity. However, it should be emphasised that the level of control and monitoring of the agent's activity is the measure of the level of subordination and integration within the franchisor's vertical structure. Along with the level of subordination, the trade off costs of going out from such a contract by the agent increase and it causes the weakening of incentives to further activity (Wainwright, 2007).

4. Conclusion

Franchising is one of the forms of vertical integration in the value creation process, and at the same time a hybrid form of exchange based on cooperation. It has a character of a relational contract whose effectiveness is in many cases greater that conducting the exchange via the market or internationalisation within the firm's hierarchical structure. However, this form of cooperation is also encumbered by transaction costs which require the establishment of the coordination structure ensuring the definition of both the conditions on which the transfer of the ownership rights or the resource valuation will take place and the reduction of transaction costs during the performance

of the contract. Franchise, as an innominate contract usually requires individual agreements and bargaining which generate *ex ante* transaction costs.

The resource pooling, however, requires their valuation and defining shares in the profits made by means of them. Due to the costs of this process and practically no possibilities of creating perfect (non-friction) contract conditions, during the performance of the contract conflicts arising from its unbalance may occur. Moreover, agency problem occurs in franchise contracts, causing the necessity to monitor behaviours, mainly of the agent, which generates further costs. Nonetheless, they are compensated by the agent's trade off costs, for which leaving the cooperation is often encumbered by higher costs than benefits. The example of franchising shows broad application of the NIE output and depicts a number of mechanisms enabling to assess this hybrid form of exchange through the prism of effectiveness understood not only from the point of view of actual costs but primarily of transaction costs whose sources are mainly behavioural.

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Chapter **22**

The Development of FMCG Franchise Systems in Poland[1]

Karolina Orzeł

1. Introduction

Political and economic changes which took place in Poland after 1989 created conditions for the launch of retail outlets by large European concerns, thus giving opportunities for internationalisation processes. New formats of stores (mainly those large selling space ones, including hypermarkets, supermarkets and discount stores) operated according to some developed routines within logistics and marketing management, which resulted in their fast growth. At the same time, such a change in the conditions of competing became a threat to sole retailers, wholesalers and producers supplying them. Franchise systems have become a natural response of the market to those changes. Initially established as loose informal purchasing groups, with time they have transformed into strong chains.

In recent years in Poland we can observe a dynamic development of franchise systems operating in the FMCG industry. It is not a typical phenomenon because franchise systems in commerce are created primarily to distribute selectable articles or luxury goods on the markets of which brand is significant for the choice of a service provider. The manifestation of the development mentioned before is frequent joining such systems by sole entrepreneurs, as well as mergers and acquisitions taking place on that market. The phenomenon occurs to the scale unprecedented worldwide, which is related to the situation of threat concerning both individual retailers and FMCG wholesalers realising potential consequences of the expansion of chain stores the effects of which can be observed, among others, in the structure of trade of developed countries.

The chapter presents an analysis of the Polish market of commercial franchise systems of the FMCG industry in Poland based on the available secondary data in the form of PROFIT System reports published in the years 2009-2015 and scattered data (information available on websites and industry portals).

2. The specificity of franchise in the FMCG industry in Poland

Due to deep fragmentation of the industry, the multitude of possessed formats and the limited scope of activities of the operators of some chains, cooperation principles within franchise may differ from each other significantly. Table 1 presents some divisions due to, among others, the store format, assignment to the type of an operator and the level of strengthening the cooperation.

Table 1. Classification of franchise in the FMCG industry

Criterion	Franchise in FMCG
Specificity of activities	Specialty stores Grocery stores
Store format	Supermarkets Delicatessen Traditional (local) stores Convenience stores
The level of strengthening the cooperation with the system founder	Soft franchise Modern (classical) franchise
Type of an entity forming the chain (operator)	Grocery wholesalers Associations of traders Trade and marketing agencies Private store chains

Source: own study based on dispersed data.

The division of franchise chains due to the specificity of activity and store format is identical with the industry guidelines, and concerns, respectively: products offered, the size of the outlet and the range of the offered assortment. Two other classifications are characteristic only for franchise relationships. Due to the type of the entity (operator) and its scope of activities in the role of the system founder, we can come across (Cabaj-Bonicka, 2012):

- grocery wholesalers – the largest entities in the industry, such as Eurocash, which can be proud of having nationwide chains;
- associations of traders – chains established at the initiative of store owners who decided to associate in order to negotiate more beneficial contracts with suppliers. They turned out to be very desirable for distributors and at present all largest chains which were established as a result of such initiatives are owned by wholesalers;
- trade and marketing agencies – firms representing interests of groups of stores, offering them support with the image, promotion, as well as the coordination of trading contacts with suppliers. FJ or Koniczynka can be examples of such chains;
- private store chains – it is a relatively new phenomenon of creating and launching franchise offers by firms which previously built chains of their own outlets only. They decided for franchising in order to accelerate these chains, and thus gain access to even more beneficial commercial terms and conditions. Topaz, Kefirek or Delikatesy Blask, among others, are examples of such chains.

The last division of franchise systems concerning the level of strengthening the coopera-tion between the franchisee and the chain founder, exists contractually only in Poland and only in the food industry. Here we distinguish:

- "soft" franchise – it is "an enhanced form of cooperation of distributors with stores, usually of-fering a limited, as compared with hard franchise, scope of support (most often limited to joint visualisation of stores, organisation of promotion in the form of a leaflet and basic training)"[2];
- "modern" (classical) franchise – such a franchise offer includes several tools providing knowl-edge about how to sell, display, promote goods, how to maintain relations with customers, advertise one's own store, etc. In return for know-how, the franchisor tries to see to its own economic result by additional fees or establishing obligatory sources of supplies in combina-tion with their high share in the total deliveries to stores.

This type of division into forms of cooperation was justified for distributors and wholesalers by numerous specific industrial conditionings, as well as the mindset and attachment to tradi-tionalism of Polish owners of grocery stores which only a few years ago effectively prevented the introduction of large-scale classical franchise. Besides, it was also about fast consolidation and joining possibly largest number of stores to which it will be possible to deliver goods, which was enabled by soft franchise.

3. Polish commercial franchise systems of the FMCG industry in numbers

Since 2014, the food and household goods industry[3], which in 2016 had 159 franchise sys-tems, has had the largest share in the commerce sector. In spite of the saturation of the market with FMCG outlets and the slowdown of the dynamics of commerce, new franchise systems are created every year in Poland (see: Tab. 2). On average, 10 of them are established every year (of which the greatest jump could be observed in 2013 when 18 new concepts were created), and 4 close down (the biggest number of closed systems could be observed in 2015 when as many as 10 systems disappeared from the market).

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[2] The definition taken from an interview with Adam Wroczyński, Project Director at Akademia Rozwoju Systemów Sieciowych (*Czy twarda…*, 2014).

[3] ProfitSystem specialists (authors of the reports being the basis for the analyses presented in the paper) within the food and household goods industry distinguish the following sub-industries: small and medium sized grocery or household goods stores (with the average sales area of up to 750 m^2), supermarkets (with the average sales area of above 750 m^2), specialty grocery stores, off licences, bakeries, specialty household stores.

Table 2. The development of franchise systems in the FMCG industry in the years 2006-2015

Year	The number of systems	The number of franchise outlets	Including the number of own outlets	Average net amount of investment in an outlet (in PLN)	Average monthly net revenues of an outlet (in PLN)
2006	56	9801	832	no data	no data
2007	62	10277	830	no data	no data
2008	75	12607	907	no data	no data
2009	84	16076	813	166,6	228,67
2010	91	17533	1074	214,89	448,03
2011	96	21061	1282	217,94	464,82
2012	124	24568	1540	206,91	350,56
2013	143	29649	4416	174,85	298,08
2014	151	31508	5086	no data	no data
2015	156	36052	5107	no data	no data

Source: own study based on (*Raport*…, 2009-2016).

For several years, also with regard to the number of franchise outlets, the FMCG industry has the largest and still growing share in the commerce sector. On average, annually, the number of entities increases by 2,900 franchise outlets. However, it should be emphasised that the share of own outlets fluctuate around 10% only. The founders of the systems most often run them as reference points for training new employees or testing new solutions (arrangement of goods, loyalty programmes, training new franchisees and others).

Commencement of activity under a well-known brand in the FMCG industry is related to a specific investment. Capital requirements vary from a few thousand zloty, when joining the chain consists only in the change of visualisation, to even a few million, when a new supermarket is created. An average net amount which had to be invested by a franchisee opening a store in the FMCG industry is 200 thousand zloty. Investment in the commerce sector is larger than in other industries, which is related in particular to the need of stocking the outlet. We must remember that franchisees' investments are long-term investments (premises, adaptation of the outlet, training the employees), thus, the economic slowdown is not a barrier, these are prospects that are important.

Since 2012, along the development of competition among franchise systems, we can observe the trend of a decrease in the value of initial investment or incurring some of the costs by the chain founder as an incentive to join a specific chain.

As Table 2 shows, despite the worse economic situation in the years 2009-2011 in the food and household goods industry, we can observe the growth of average revenues. A few percentage drops in two subsequent years were connected with the occurrence of smaller and smaller outlets in that industry, the lowering of the consumption level and a change in customer preferences with regard to the place of buying products in favour of places with the image of being cheaper to buy goods, such as discount stores, marketplace halls, markets. However, the relation of average costs of net investment to net revenues is favourable, as PLN 1.00 investment enabled to obtain an average monthly revenue of PLN 1.8.

4. Examples of franchise systems of the FMCG industry in Poland

The reason for the popularity of franchise relationships among entrepreneurs, regardless of the turbulent situation on the market, is the economies of scale, e.g. in the form of better supply conditions, which enables franchisees to compete in terms of prices. The significance of franchising can be best seen on the example of the food industry where, despite the overall decrease in the number of stores on the market, their number in franchising is growing systematically.

Owners of subsequent outlets, so far operating independently, integrate with large chains, as in this way it is easier for them to oppose competition which at present consists mainly of food and household goods discount stores. Not only price is important here – what counts is a proven concept, appropriate assortment and the reaction to customer needs. It is difficult for independent store owners to meet these requirements. therefore, they orient towards franchise systems with a lot of experience. On the other hand, the economic slowdown excluded unattractive franchise offers from the market systems. It proves the maturity of the market and strengthens the position of franchisees. On the other hand, strong competition among founders of the systems and a constantly increasing number of licences force franchisors to struggle for future partners. Taking the above circumstances into consideration, only a few systems will maintain on the market, and they will be successively taking over chains prospering worse.

Due to the limitations in the capacity of this chapter, it is not possible to present the profiles of all the systems operating in the industry, therefore, we present only 8 of them, which are characterised by a systematic increase in the number of outlets. As Table 3 shows, the systems operating within soft franchise are characterised by the fastest growth rate. Even with a large volume of associated outlets, they are able to increase their number annually by 18% on average. Hard franchise develops a little more slowly, as due to higher requirements posed to franchisees it requires the engagement of more time – by 11% on average.

Table 3. The largest franchise chains of the FMCG industry by the number of associated stores within so-called soft franchise (data for the years 2009-2015)

Name of the chain	Operator	Number of stores in the year:						
		2009	2010	2011	2012	2013	2014	2015
ABC	Grupa Eurocash	3420	3990	4651	5373	6133	6900	7090
Lewiatan	Lewiatan Holding (Grupa Eurocash)	2600	2730	2750	2780	2800	2882	2954
ODIDO	Makro Cash and Carry Polska S. A.	0	0	798*	1667	2000	2000	1921
Nasz Sklep	Grupa Kapitałowa Specjał Sp. z o. o.	1331	1495	1800	2451	2550	2750	2900

* Such impressive dynamics (0 outlets in 2010, 798 outlets in 2011) Odido owes to the reformatting of the majority of Aro stores into a new brand.

Source: own study based on scattered data.

ABC is the most numerous franchise chain in Poland, operating since 2005. The firm operates as soft franchise, offering to the system participants free of charge visualisation of stores, training, support from experts and discounts in Eurocash wholesalers. It consists of 7,090 stores with annual

turnover of PLN 7.4 billion. The estimated cost of equipping an outlet with the sales area of 70 m² with furniture, refrigerated counters and IT system is about PLN 50 thousand, whereas the cost of the first stocking of such an outlet is about PLN 60 thousand (*Sklepy…*, 2017). Fixed monthly fees are PLN 200, after a year of the term, the contract can be terminated with no consequences.

Established in 1994, **Lewiatan** is a Polish chain with a long tradition. It associates 3,000 outlets and is the second, taking into consideration the number of outlets, chain in the Eurocash portfolio. Lewiatan is mainly interested in joining outlets with the area above 150 m². A franchisee is obliged to maintain a specified assortment of goods included in central and regional contracts, own brand products (Lewiatan has about 250 of them in its offer), and promotional products. Entrepreneurs also pay a monthly fee depending on the store format. In 2016, more than 3,000 outlets functioned within the system, generating the turnover of PLN 10.4 billion (*Lewiatan…*, 2016).

ODIDO is a chain managed by Makro Cash and Carry, a wholesale distributor number 2 on the Polish market (2,000 stores). The system is a good example of the transformation of a supply contract into a franchise system. A necessary condition for joining it is the area guaranteeing the self-service character of the store (80-150 m²). An entrepreneur incurs the costs of branding (2-4 thousand PLN), but it has a possibility to be reimbursed the majority of this amount. In the case of larger technical modifications, Makro has preferential conditions of financing them. Franchisees are obliged to maintain an appropriate number of own product brands (Fine Food, Aro) which support the price competitiveness of ODIDO stores. The support for a franchisee includes the system of trainings, the assistance of a sales representative, the bonus programme and the loyalty programme, the access to cheaper energy. The contract is signed for an indefinite period of time, the notice period is 30 days (Joźwik, 2014).

Polska Sieć Handlowa **Nasz Sklep** was established in 2000 and was a response to large selling space foreign competition. The chain organiser is PSH Nasz Sklep S.A. being a part of Grupa Kapitałowa Specjał. At present[4], the chain associates over 3,400 franchise stores under four brands: Nasz Sklep, Delikatesy Premium Nasz Sklep, Delikatesy Sezam and Express. Its range includes 12 voivodeships: Lublin, Lesser Poland, Łódź, Subcarpathian, Greater Poland, Silesian, Świętokrzyskie, Opole, Lower Silesian, Mazovian, Pomeranian, West Pomeranian. Nasz Sklep has also 45 own stores trading as: Nasz Sklep, Delikatesy Sezam, Delikatesy Premium and Livio. The majority of the stores operate in Subcarpathian Voivodeship. Others are located in the following voivodeships: Lublin, Silesian and Pomeranian.

Table 4. The largest franchise chains of the FMCG industry by the number of stores associated within so-called hard franchise (data for the years 2009-2015)

Name of the chain	Operator	Number of stores in the year:						
		2009	2010	2011	2012	2013	2014	2015
Delikatesy Centrum	Grupa Eurocash	466	561	660	773	820	1001	1007
Intermarche	ITM Polska (Grupa Muszkieterowie)	145	161	184	198	200	221	232
Carrefour Express	Carrefour Polska Sp. z o. o.	30	80	130	300	408	468	523
Piotr i Paweł	Piotr i Paweł Sp. z o. o.	66	79	82	90	100	116	138

Source: own study based on dispersed data.

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4   Data from the websites – http://www.nasz-sklep.pl/realizacje/pid/o-nas-o-nas/.

The first stores of the **"Delikatesy Centrum"** chain were created in 1999. The organiser of the commercial chain was Carment company, which conducts activity in wholesale distribution of FMCG consumption goods in the region of the south-eastern Poland. In 2006, the brand joined the Eurocash Group and since then it has been successively increasing the number of stores. The requirements imposed on entrepreneurs are now much higher. Stores joining the Delikatesy Centrum franchise chain have to fulfil the following conditions:

- an appropriate location of the building,
- the area of the premises of minimum 120 m^2 of the sales floor and welfare and office facilities,
- car park outside the store.

Eurocash prefers smaller towns and housing estates of larger cities, it is oriented to the expansion in the northern Poland. The termination of the contract before the lapse of six years imposes the obligation to make additional payments on the franchisee. The entrepreneur is obliged to respect the purchase policy of the chain and maintain high standards of both visualisation and the availability of products in its store. A monthly franchise fee depends on the turnover, joining the chain is also payable. In return, the entrepreneur makes use of the Eurocash purchasing power, which allows to offer most beneficial prices and the greatest variety of goods. Eurocash also provides marketing support, IT system, training, discounts on shopping at its wholesalers.

A firm known for running hypermarket chains offers two franchise concepts: **Carrefour Express** (Joźwik, 2014) minimarket with the green logo and convenience Carrefour Express (the basic products) with the orange logo. The first type requires 100–500 m^2 of the area. It is intended for entrepreneurs with experience in commerce. Minimarkets can be located both in urban and rural areas.

On the other hand, a convenience store requires as much as up to 100 m^2 of the retail space, operates in cities, can be also run by beginner traders. Carrefour Express chain includes 350 stores. In the case of stores with the orange logo, the franchisor covers the costs of equipping the store in 100 percent. "Green" stores are provided by Carrefour with visualisation, furniture and IT system, clothes for the staff and small equipment. It is possible to obtain a trade credit for the first stocking of the store.

Carrefour provides franchisees with consulting by the regional manager, organises promotional actions, training, ensures the IT system, tools for the analysis of the store activity. Monthly fees depend on the store turnover. The contract is signed for 5 years.

Intermarche supermarkets, belonging to the French Musketeer Group, are an example of classical franchise with strong organisational culture. Stores are established in towns of up to 70 thousand inhabitants, in locations indicated by the Musketeer Group. In Poland, the chains of Intermarché supermarkets, along with onsite petrol stations generated nearly PLN 4.7 billion of turnover, thus marking the growth in this respect by 6.7 percent year-to-year. In 2016, Intermarché opened 11 new stores, which means that by the end of the year there were 232 of them in total (*Dobry…*, 2017).

In the case of this brand, franchise is inscribed into the development strategy – all stores belong to franchisees, and supermarket owners are included in the composition of the Management Board of the Musketeer Group (*Raport…*, 2014). An entrepreneur should have 400 thousand zloty which is the capital supplying the company established by the franchisee to manage the outlet. The characteristics of the Group functioning is the obligation to work two days a week in the headquarters, that is why at least two partners are needed to open a store in the Intermarche chain. When opening a store, a franchisee can count on comprehensive help in stocking, recruitment and training of the staff, the choice of suppliers, as well as marketing support. Fees for the headquarters are paid

once a year (the equivalent of about 0.6% of the turnover). The franchise contract is concluded for 10 years, and if the entrepreneur wants to terminate it earlier, it must find a buyer for the store among other chain partners.

The oldest delicatessen chain in Poland, with a 20-year-old history, is "Piotr i Paweł" (Ciechomski, 2009). The first store doing business under this name was opened in 1990. The motto of the chain founders – Eleonora Woś and her sons, Piotr and Paweł, is invariably the slogan "a store in which we would like to buy ourselves". In 1995, the chain founders opened the first supermarket opened 24 hours a day, in 2000 the first franchise contracts were concluded, and in 2008 the company launched as many as 11 new stores, which means the highest dynamics of the growth of the number of outlets since the beginning of the chain existence. From a regional chain the firm evolves into the whole Poland's chain – it is present in 9 of 16 voivodeships. In 2016 "Piotr i Paweł" achieved a turnover of PLN 2.233 billion, with over 140 stores functioning all over Poland (Nawrot, 2017). The average sales area of the stores is 1,100 m^2, and the range of products amounts to 30,000 products. The chain also develops in the omnichannel model. It opens next brick and mortar stores, it has launched a logistic warehouse for online shopping, and systematically enhances sales in the e-commerce channel.

5. Conclusion

Franchise systems in the FMCG industry functioning now on the Polish market have specific competitive advantages owing to which they were not "swept away" from the market during the expansion of chain stores and discount stores, and their number is systematically growing year by year. Most of all, the following should be mentioned here:

- a possibility to take advantage of better supply conditions (e.g. 160 Eurocash wholesalers is at the disposal of each of 12,000 outlets associated within the operator),
- training system offered by the headquarters of each system,
- giving access to the system participants to information technologies possessed by the chain,
- flexible marketing services (in the case of soft franchise boiling down to providing the participants with product leaflets and uniform visualisation of stores, in the case of hard franchise, large scale one (national advertising) and related to incurring additional fees.

With strengthening the cooperation (withdrawal from soft franchise towards modern franchise), the competitive advantage of the franchisee increases due to the growth of the number of benefits passed to it. Thus, we can draw a conclusion that in the coming years, on the Polish market of commercial franchise systems of the FMCG industry only those systems will remain which will create an optimal package of assets which will be possible to be implemented in any conditions.

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Chapter **23**

Factors and Conditions Determining the Development of Companies Launched Thanks to Grants for Starting One's Own Business[1]

Agnieszka Mazurek-Czarnecka

1. Introduction

Launching a business and remaining on the competitive market of new economic entities is a sign that the economy is developing. Building up a company from scratch is a creative process which requires the engagement of both human and financial capital. For a new economic entity, good recognition of factors determining the creation and survival of the company makes it more possible to achieve success. Moreover, it contributes to the establishment of effective politics of stimulating resourcefulness (Gaweł, 2011).

The power that motivates to think and act in an innovative way is understood as a predisposition to enterprise. Resourcefulness, especially in the context of the Lisbon Strategy, is one of key factors influencing economic growth, creating new workplaces, realizing social cohesion and reducing social exclusion (the Opinion of the European Economic and Social Commitee). It constitutues one's ability to put theory into practice.

This article concerns entrepreneurs who benefit from public aid in the means of grants for starting one's own business. The aim of the article is to depict factors and conditions of the development of undertakings which use one-time financial support for launching own company in the Malopolska province. The subject of studies are entrepreneurs who benefited from grants in 2007-2013 as well as factors and conditions affecting the companies' survival and development. A descriptive analysis of literature on this subject were used in this research.

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2. Factors necessary to run a business

Enterprises transform resources into products and services. The potential of a given enterprise depends on the intensity of production. Literature on the subject contains various forms of classification of factors necessary to run a business.

According to J.B. Say, the production factors are the land, the capital and the labour. A. Marshall, in turn, adds to these organisation and resourcefulness (Marek, 2001, pp. 275-276).

In the classical point of view, resources are necessary factors for running a business and among these we can distinguish (Surmacz, 2009, p. 47):
- natural (the land and other natural resources),
- human (people's skills, manual as well as intellectual labour),
- capital:
    - material resources (technical and technological potential, fixed assets),
    - financial factors.

In the literature on this subject, particular types of resources are identified with the capital of an enterprise. Resources are divided into four categories (Sopińska, 2007, p. 142):
- physical capital – consisting of material assets,
- financial capital – financial resources and all possibilities to gain them,
- human capital – experience, skills, intellectual potential and personality traits of employees,
- organisational capital – qualities and attributes of a company, e.g. its image, organisational structure, internal relations, internal regulatory systems, management style, organisational culture and relations between an enterprise and its environment.

According to S. Sudoł (2008, pp. 40-41), there are five most essential factors which influence resourcefulness, i.e.:
- general management of an establishment and its efficiency,
- market infrastructure – functioning of many financial institutions such as banks, stock exchange, insurance companies,
- country's social and economic policy – characterized by stability, lucidity and uniformity of regulations of economic and social life,
- economic, political and social system of the country – an open economy, private property which is protected and a broad scope of political and economic freedom,
- economic system of the country – the condition of the labour market, the standard of living, the situation on the financial market, the level of social development.

Factors closely related to the personality of workers are of big influence, too. The desired personality traits are: persistence, diligence, ambition, creativity, willingness to achieve financial benefits, tendency to take risk, independence and the sense of power. Education and the young age also have a positive effect on resourcefulness (Czemiel-Grzybowska, 2011, p. 35).

Factors which affect resourcefulness can be divided into: macroeconomic ones, which depend on territoral scope (from local to international), institutional ones and sector- specific ones (Pogoda, 2014, p. 44).

Macroeconomic factors influencing resourcefulness are (Acs et al., 1994):
- the level of economic development (GDP per capita),
- support for the promotion of high technology, changes in the industry structure,
- the share of women on the labour market,
- unemployment,

- cultural indications to avoid individualism and uncertainty.

Two macroeconomic factors, i.e. foreign direct investment and the competitiveness of imported products have a negative effect on resourcefulness in a given country (Backer & Sleuwaegen, 2003).

3. Local factors which have influence on running a business

A. Weber underlines that costs and profits are of great significance when it comes to the choice of place for running the business (Weber, 1997). Location is one of conditions determining success of an undertaking and it is given much attention in M. Porter's industrial clusters theory (Porter, 2000). The author emphasizes the fact that the cluster reduces the risk connected with finding new clients. Also, it reduces costs.

Regional factors play a significant role in the decision making process about running a business in a particular location. P. Mueller emphasises the fact that decisions are connected with local conditions, which at initial stages have effect on prospective entrepreneurs and their future (Mueller, 2006, pp. 41-58). From this perspective, decisions about launching a company are made based on previous work experience, especially running one's own business, rather than on education. In this scenario, financial capital is of lesser importance than social capital.

Factors of regional character that influence resourcefulness and, in particular, starting up new businesses can be divided into four categories (Mueller, 2006, pp. 41-58):

- human capital – education, experience in work in micro – small, medium and big companies, experience in management, experience in management of a small company together with experience in running one's own business,
- social capital, which relates to the experience of one of the parents in running their own company or the experience of a family member who is currently running a company,
- financial capital connected with the amount of savings and average household income,
- entrepreneurial background, number of small and new enterprises for every 1000 citizens, the rate of new companies, the share of small and new firms as well as the rate of new firms.

Academic studies conducted in USA indicate that launching new companies is also influenced by such factors as: expenditures on research and development, mobility of the workforce and the government's policy on protecting competition (Choi & Phan, 2006).

Italian scientists, C. Michelacci and O. Silva (2007, pp. 615-633) point to developing resourcefulness on regional level from the angle of social capital. They noticed that companies which are set up in the entrepreneur's birthplace have better access to external funding and costly technologies.

Studies on regional resourcefulness carried out in China by Yang Kaizhong and Xu Ying (2006, pp. 174-184) depict that differences in resourcefulness are strictly connected with the growth of local business, but not with economic development, market economy, urbanisation, wages and unemployment rate. Differences in the level of resourcefulness are directly related to the economic growth.

Polish researchers enumerate such external, macroeconomic conditions which influence resourcefulness: economic situation, supply, demand, inflation, regulations, social and cultural factors, dynamics of economic growth, development of technology, financial system, tax system, stability of currency (Danielak, 1999, pp. 87-91). Local or regional factors, like local salaries, local taxes or unemployment rate have a significant impact on the number of new undertakings (Carlton, 1979).

Among Polish studies on regional conditioning of resourcefulness it is worthwhile to get accustomed with research carried out by M. Goryni, who stresses the importance of foreign investors

in creating competitiveness of local entrepreneurs (Gorynia et al., 2005, pp. 2-8). In her analyses of the influence of the local authority on local resourcefulness, W. Czmiel-Grzybowska (2004, pp. 173-187) notices the need to create infrastructural conditions as well as financial institutions, supporting the development of international trade, creating the system of economic monitoring and the development of scientific and research facilities. M. Strużycki (2004), in his studies of conditions of development of small and middle companies emphasises the importance of participation in industrial clusters, partnership of financial institutions and the use of the latter one.

It needs to be emphasised that in current studies, age was rarely taken into consideration among factors influencing resourcefulness. The age criterion refers in many cases only to how old enterprises are, not to the age of entrepreneurs themselves (Reynolds, 2009, p. 96).

4. Factors determining the companies' survival and development

Resourcefulness requires certain stimulation in the form of creating favourable conditions which encourage people to launch new businesses and run them (Kuciński, 2010, p. 18). In order to survive in current difficult economic situation, microenterprises must look for innovative ways of being competitive on the market, implement many new innovative solutions, respond to customers' needs and predict their expectations as well as react to new social, legal and tax issues (Janczewska, p. 54).

Success is a subjective, multidimensional notion and it is tightly connected with the goals pursued by every enterprise. The dominant aims of the enterprise are as follows (Kopertyńska, 2005, pp. 114-115):
- maximization of sales,
- obtaining new clients,
- maintaining the share in the market,
- increasing the share in the market,
- driving competitors out of the market,
- return on investment in a specific time.

Orientation on the market, obtaining more and more new clients, high quality of products and services, constant searching for and implementing innovations, very good care of employees, development of non-material resources and striving for the enterprise's uniqueness are considered by T. Sztucki (1998, p. 316) to be the main factors contributing to the company's success.

There are many factors that influence the character, structure and dynamics of development processes. Internal factors are the basic ones and among these one can distinguish (Storey, 1994, p. 123):
- factors of the entrepreneur: motivation, age, sex, experience and family traditions,
- factors of the enterprise: sector, age, legal status, size, location and ownership,
- type of development strategy: matching to the market, focus on the client, pricing strategies, positioning on the market, quality of products.

Knowledge gained at school, complemented by business literature, experience and professional contacts from previous workplaces are essential when launching a new business. At the initial stage, the biggest help for every one in five entrepreneurs is the help of their family or some business partner. Though, Polish entrepreneurs are not critical enough of their business skills and preparation to run their own business (Klimek, 2011, pp. 134-135).

In research about resourcefulness, age, sex and education are most problematic. According to *Global Entrepreneurship Monitor* report, people aged 25-34 are most resourceful. However, there is no correlation between high education and resourcefulness (Reynolds et al., 2004). Yet, these conlusions have not been confirmed by any other study (Wennekers et al., 2007). M. Goszczyńska (2010, p. 72) claims that younger people are less thrifty, spend more money and they are much less afraid than the older ones to make decisions. L. Uhlaner and R. Thurik (2007, pp. 161-175) prove in their studies that higher education does not go hand in hand with active entrepreneurship and self-employment. However, Z. Acs, P. Arenius, M. Hay and M. Minniti (2004) proved that there exists positive correlation between education and active resourcefulness. The connection between sex and resourcefulness and self-employment is even harder to determine. This issue is meticulously described by S.L. Mueller (2004, pp. 199-200).

Regional factors, like manufacture markets, material resources, workforce, capital and information resources have influence on the establishment of micro- and small enterprises. Among these can be distinguished: demographic factors (number of citizens), factors shaping the purchasing power and the population's demand (amount and structure of revenues of particular households), skills and qualifications possessed, standard of social education, social- economic infrastructure, location and its natural resources, local law, economic potential and institutional resources (Lisowska, 2013, p. 41).

If an entrepreneur wants to be reckoned with on the market, he or she must continuously search for new chances (Politis & Politis, 2009, pp. 202-211). Competing for the share in chances has become the aim of the undertakings' competitive activities. Striving to obtain more shares in the market has receded into the background (Hamel & Prahalad, 1999, p. 17). In the nature of things, the chances are connected with competitive advantage (Schindehutte & Morris, 2009, pp. 241-276), which is understood as some distinctive feature or asymmetry in any area of an enterprise and concerning any attributes or factors thanks to which the enterprise is able to provide better services for clients through giving them more value which, in turn, results in higher effectiveness (Ma, 1999, pp. 259-266). Competitive advantage consists in the active combination of values with chances (Bratnicki, 2009, p. 50). According to W. Churchill's famous saying "if you don't take change by the hand, it will take you by the throat" (Błaszczyk & Czekaj, 2010, p. 472), the company must keep up with the changes because if the company remains in the same place on the market, it actually regresses (Kaleta, 2006, p. 362).

Knowledge has become of the most vital resources in the ever-changing surrounding of an enterprise (Wee & Chua, 2013). Micro-companies neither appreciate the value of knowledge nor consider it to be a factor of development and innovation. Knowledge about the market's needs, use of new technologies as well as the fact that they lack in research and development department is regarded by them to be of little importance (Juchniewicz & Grzybowska, 2010, pp. 101-102). Educational barrier is one of the biggest obstacles to the development of a small firm. Little knowledge of modern methods of management, little entrepreneurial culture, limited access to economic information and inability to obtain, gather and use it, together with little or no Internet and IT use are the most vital factors hindering the development of the enterprise (Kozioł, 2013, p. 47). Innovativeness of enterprises, apart from resourcefulness, is of great significance. Thanks to introduction of innovations, enterprises provide new products and services which are the direct answer to the consumers' needs. They also improve the effectiveness of meeting the customers' current requirements (Łyżwa, 2014, p. 80).

In the literature on the subject, models of company's creation are considered in the context of phases of the firm's existence and issues concerning its financing at various stages. Many researchers try to determine factors which lead to the success of new companies. Most frequently, these factors are divided into three groups (Corsten, 2004, p. 45):

- personality-related factors, referring to the character and qualities of the company's owner,
- factors referring to the qualities of the enterprise at the moment of its foundation,
- factors describing macroeconomic, local and industry surroundings at the moment of its foundation.

5. Key factors determining the survival of companies benefiting from a grant

Przedsiębiorcy z dotacją. Efektywność dotacji na założenie działalności gospodarczej finansowanych z Europejskiego Funduszu Społecznego (Entrepreneurs benefiting from a grant. The effectiveness of grants for setting up a business funded by European Social Fund) report aims at determining the influence of particular factors on the companies' survival. Logistic regression i.e. analytical techniques which allow to establish the relationship between quality (survival of the company versus liquidation of the company) and other quantitive and qualitative variables, were used. The aim of the analysis was to check by what percentage the probability of the firm's survival rises or falls depending on other characteristics (e.g. education, sex or experience in running a company). Analyses prove that:

- probability of company's survival decreases at 87.4% for persons who have already run a company, in comparison to people who have never done it,
- probability of company's survival decreases at 52.3% for people who have benefited from a job centre grant in comparison to people who have received a subsidy from some other project provider,
- probability of company's survival falls at 42.3% for people with primary or lower secondary education in comparison to people with high education,
- probability of company's survival falls to 38.2% for women, in comparison to men,
- probability of company's survival decreases at 38% for people with post-gymnasium (post-lower secondary) education in comparison to those with high education,
- probability of company's survival drops at 28.3% for people with post-secondary education in comparison to those with high education,
- probability of company's survival decreases at 26.1% for people who live in the countryside in comparison to those living in a city.

In conclusion, the probability of the firm's survival decreases for people who have already run a business, or who obtained a grant from a job centre, for those with lower education and for women and villagers. Figure 1 depicts the rates of survival for certain groups (for variables included in the model).

Figure 1. Survival of companies depending on their characteristics
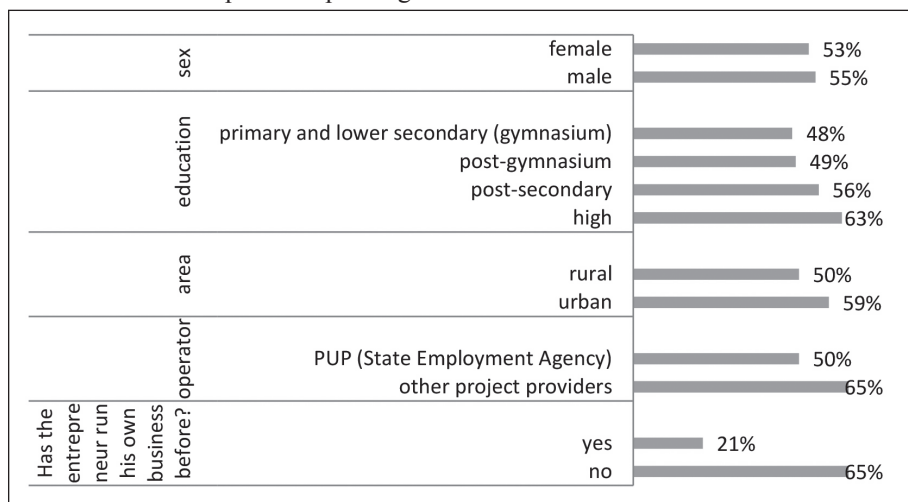
Source: (*Entrepreneurs …*, 2014, p. 51.)

The highest probability was estimated for the variable describing the businessmen's' experience in running a company. The survival rate for subjects who have already tried their hand at running a business (the so-called "second chance entrepreneurs") amounts to 21% whereas for those who have never been in business to 65%.

6. Conclusion

Summing up, one can make a conclusion that factors necessary to run one's own business is everything that a company possesses and everything which enables it to function and be competitive on the market. Yet, there are many factors of development that have influence on the enterprise's character, structure and dynamics of development processes. Basic, internal factors are those of the entrepreneur as well as the enterprise and kind of development strategy. Having analysed enterprises which used one-time benefits for launching a new business, one can come to the conclusion that the probability of the company's survival decreases in case of: entrepreneurs who have run their own business before, undertakers who were given grants from PUP (State Employment Office), people with lower education as well as of females and villagers. It means that internal factors describing the entrepreneur play the most significant role when it comes to the company's survival.

Since the issue of factors and conditions determining the survival and development of self-employment companies launched thanks to grants is very complex, I will continue my analyses on this subject in further studies.

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Chapter **24**

Consumer Rights Protection in E-Business

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1. Introduction

The expansion of contemporary information and communication technologies had important implications for development of many areas. With the emergence of electronic business, the companies have redefined their business strategies, endeavoring to keep up with the changes as well as to ensure consumer satisfaction. Moreover, the internet development has enabled to the consumers easier transaction performance, especially in terms of not having enough time for purchase. In contrast to previous period, when it was necessary to visit a retail store, today a percentage of consumers who collect data or make orders via the internet are higher. Comfortability during the purchase is one of the main factors that contribute to intensification of online transactions.

Consumer behavior is defined by many factors, both internal and external. Changes in demographic composition of consumers, as well as psychographic and social characteristic determine in many ways their buying behavior. Consumer satisfaction is one of the key marketing categories which also represent the research topic of numerous authors. Measuring of consumer satisfaction should be the integral part of companies' business policy, because only with this conduct the positive results would be achieved. This paper seeks to examine electronic consumer satisfaction, as one of relatively new terms which characterizes a modern marketing environment. Also, due to the fact that consumer satisfaction include subjective perception, it is necessary to take into account their expectations and previous experience when it comes to the products ordered via the internet (Marinkovic, 2012, p. 85).

2. Theoretical background

Online environment has an essential role in creation of marketing strategies. However, purchase via the internet brings certain risks which consumers confront every day. Precisely, this is one of the reasons for which in performing transaction online is more difficult to ensure loyalty and increase consumer lifetime value. Despite the large number of advantages and significantly facilitated process of purchase through modern media, there are some disadvantages which consumers see as preventers of initiating the purchasing process. Some of them refer to: impossibility to see

or try the product before buying it, the necessity for possessing the credit cards for online transactions, difficulties in returning unsuitable products and high cost of delivery (Browne et al., 2007).

Although there are more and more companies that understand the importance of selling products via the internet, when it comes to the consumers in Serbia, they do not have sufficiently developed purchasing habits for using this channel. Namely, according to the latest available data for the year 2016, even 54.6% of people have never bought via the internet. Exactly the lack of information, as well as certain risks which consumers confront on daily basis, show the importance of adequate protection of consumer rights in this area. However, regardless of data which are considerably below European and world average in the field of buying via internet, the number of consumers who performed transactions grew for more than 230 000 in contrast to 2015 (Statistical Office of the Republic of Serbia). Observed according to categories of products, the largest number of consumers in 2016 bought clothes and sport products (49.8%), electronic equipment (20.9%), furniture (19.2%) on the internet, and the lowest percent of consumers used internet for purchasing books and magazines (3.5%) (Statistical Office of the Republic of Serbia).

Due to the lack of physical presence of the seller, as well as specifics of virtual environment, the level of consumer uncertainty increases in terms of their rights protection and fulfillment of their requirements in accordance with the expectations from the product. In the process of buying products electronically it is very important to gain the initial consumer confidence, which could be the great foundation for the continuation of purchasing and creation of their loyalty (Brengman & Karimov, 2012). In this way consumer perceived risk decreases and the degree of their trust in companies which distribute their products on the internet as the channel of communication increases. In order to ensure consumer trust, as a key variable which represent subject of the consideration, within an empirical part security and reliability in performing transaction via internet are listed. Because of this, it is in the companies best interest, despite their activity and their size, to pay special attention to these issues, which would have positive implications to the improvement of business results. Namely, certain authors emphasize that increasing of online transaction security level could enhance the willingness of consumer to buy and that this represents the crucial factor in the concept of consumer managing (Akman & Mishra, 2017).

In a virtual world, intensity of risk factor is increasing. Thus, the perceived risk of shopping in virtual world could refer to different variables (Min Chiu et al., 2014):

- Financial risk.
- Product performances.
- Consumer privacy protection.
- Delivery issues.

In an endeavoring to keep the information reliability and to ensure transaction security, companies are investing more and more money in the implementation of security systems. The perceived information security in electronic business refers primarily to the consumers' confidence that their information would not be misused, and that it would not be stored for the future transactions or used by the third party (Chellappa & Pavlou, 2002). The research conducted during the year 2016 on a sample of 2 400 individuals indicates that the largest number of consumers (56.7%) left their personal data on the internet; 53.6% consumers left their contact data; and the lowest number of consumers left data which referred to information regarding payments, such as bank account number or information about payment cards, which indicates that the financial risk in performing internet shopping is omnipresent. According to the global study conducted by Nielsen, the most

common mean of payment for online shopping are credit cards (53%) and digital payment systems (43%). However, more than half of surveyed respondents highlighted the concern that their personal data on the web sites would remain secure and confidential (Nielsen).

By taking into consideration specific aspects which exist in electronic business, as well as by proper management of complaints, the sale prospers and contributes to consumer satisfaction. In a virtual world which is characterized by the distinct complexity and dynamics, companies recognized that the effective complaint management became the imperative. If the online sites for performing a purchase were consumer oriented and if they emphasized all necessary attributes which consumer took into consideration during making decision to buy something then it would have a positive impact to the consumer attitudes and their satisfaction with performed purchase. As a consequence of this process a yearly company sale increases, as well as the market share which they achieve in buying environment which is characterized by growing competitiveness (Kim et al., 2009). Some of the authors have pointed out the fact that consumer satisfaction with transactions which are performed via internet make a suitable foundation for increasing consumer's loyalty. Although the sale via the internet in Europe records the growth over 10% every year, growth rate of consumer satisfaction is on the significantly lower level (Bijmolt et al., 2014). Consumer complaints in the field of electronic commerce are most commonly associated with the after sale services and issues with delivery of suitable products. The researches show that satisfied consumers continue to use internet as a communication channel, while the consumer dissatisfaction contributes to the fact that internet ceases to be selectable option of consumers. In the process of complaint management it is necessary to motivate consumers to express their dissatisfaction, regardless to which segment of purchase it refers. There are certain researches in favor of this, which indicates that unsatisfied consumers often do not complain. However, it is noticed in marketing literature that even the level of complaints are higher online in relation to offline environment. The highest level of repurchase is recorded in categories of the consumers who were dissatisfied with some elements, but their complaints were successfully solved, and the percentage of repurchase of the consumers who were immediately satisfied with bought product via internet is lower.

3. Legal aspects of protection of the consumers' right in e-commerce in the Republic of Serbia

The area of legal consumer protection – based on the principle of a market economy on the one hand, and the ideas of social responsibility and justice on the other, is a very important area in constant and dynamic development of modern, democratic state. Consumer protection also means complete, comprehensive and adequate protection of consumers, both in the sphere of education, training, information, and in other areas of influence, deceiving actions and complicated and complex factors, which in everyday's life of consumers have the potential to harm their life, health, environment and their family. Consumer Protection in Electronic Commerce represents a separate, specific, increasingly present and necessary regulated set of legal regulations. For the purpose of this paper, we will focus on key provisions of a Consumer Protection Law (Official Gazette of Republic of Serbia, No. 62/2014,6/2016) and the Law on Electronic Commerce (Official Gazette of Republic of Serbia, No. 41/2009, 95/2013), as basic regulations in this area.

During the transitional and abovementioned market reforms, the need for developing this area of public policies in the Republic of Serbia has been recognized – not only because of the provi-

sions provided for by the Constitution itself regarding the Stabilization and Association Agreement with the European Union, but primarily in the interests of its own citizens, all of us who, on a daily basis are in the role of consumers.

Under the provisions of the Constitution of the Republic of Serbia from 2006 (Official Gazette of Republic of Serbia, No. 98/2006, article 90), the Republic of Serbia protects its consumers, while specifically prohibits acts directed against health, safety and privacy of consumers, as well as all other dishonest activities on the market. By the Law on Electronic Commerce, in the Act. 1 there are conditions which are predicted and ways of giving information by social services, commercial messages, rules relating to the conclusion of contracts in electronic form, the liability of service providers of the information society, monitoring and violations. It is important to note that this law according to the Act. 2 of the Law on Electronic Commerce does not apply: to the protection of personal data, the activity of notaries and other related professions regarding the use of delegated public powers, restrictive agreements within the meaning of the competition rules, taxation, representation of clients and protection of their interests before the courts, as well as games of chance with cash deposits, including lottery games, casino games, betting games and games of chance, unless a special law provides otherwise. When it comes to the text of the contract and the provisions of general business conditions which are an integral part of the contract completed in electronic form, the service provider shall ensure that services are available to users in a way that allows their storage, re-use and reproduce (Consumer Protection Law, article 13). The service provider is obliged to, without delay, by electronic means, with a separate electronic message, confirm receiving electronic messages containing an offer or acceptance of the offer to conclude a contract (Consumer Protection Law, article 14, No. 1). However, here we have special rules when it comes to consumer contracts, since the contracting parties who are not consumers in mutual contractual relations may explicitly agree on deviation from the provisions of Act. 14, No. 1. Law on Electronic Commerce, referring to the confirmation of receipt. The Law on Electronic Commerce is particularly important when it comes to the issue of distance sales via the Internet, as it is one of the forms of electronic commerce. Special rules are provided for when it comes to consumers as consumers, and when this is not the case. In particular, it is provided that the provisions of this Law shall not apply to contracts concluded by electronic mail or other means of personal communication generated electronically.

The new Consumer Protection Law came into force on 21/6/2014, and it began to apply from 22/09/2014. The legal basis for the adoption of the Law on consumer protection is mentioned in Act. 90 of the Constitution of the Republic of Serbia by which the Republic protects consumers. In the fifth part of the consumer protection law, we find provisions on the protection of the consumers in the exercise of rights from the distance contracts and contracts concluded outside from business premises. Remote contracts in the Consumer Protection Law (Consumer Protection Law, article 5, No. 1, 8) is defined as a contract concluded between a trader and a consumer under an organized selling or providing services remotely without the simultaneous physical presence of the trader and the consumer, with the exclusive use of one or more means of distance communication up to the time of the conclusion of the contract, including the moment of conclusion. When it comes to the means of distance communication, the Law on Consumer Protection of Serbia, (Consumer Protection Law, article 5, No. 1, 9) means of distance communication is a tool that allows the conclusion of a contract between the merchant and the consumer that are not in the same place at the same time, but is not given precisely, as in other laws, what is considered by that means of communication. The aforementioned portion contains more detailed provisions regarding

the duty for information when it comes to the distance contracts and contracts concluded outside the operating unit; the right of the consumer to withdraw from the contract; calculating deadlines for cancellation of consumer contracts, the formal requirements for the conclusion of contracts away from business premises and conditions for the conclusion of distance contracts; the execution and delivery; dealer commitments and obligations of the consumer in case of withdrawal from the contract, the consequences of exercising the right of withdrawal from contracts related contracts; exceptions to the right to withdraw from the contract and limited use of certain means of distance communication (Consumer Protection Law, article 27-40). It is important to point out that the Consumer Protection Law protects consumer rights in case of purchase on the basis of order by e-mail, Internet, TV sales and other "distance selling". Frauds like "sales of unsolicited goods" i.e. sending the goods that you did not order, with the requirement to pay it is prohibited by this Law. If you buy goods or services from the website, with this order via e-mail or from a dealer who advertised by teleshopping, you are entitled to cancel the contract, without giving reasons within 14 days of delivery of the goods to the consumer.

Consumers' protection is an area that can directly contribute to the success of economic reforms in Serbia. Partly, this policy implies encouraging the active participation of citizens in the market, which is based on their knowledge of consumer rights and interests. Consumers who are able to make adequate decisions based on quality information are encouraging competition and promote the business activities of enterprises, thus stimulating economic growth. However, in order to achieve this, consumers need to feel safe on the market and have full confidence in its functioning. This means that consumers must be able to effectively fulfill their fundamental rights relating to security, education and information, protection of economic interests, effective resolution of consumer problems and also to represent their interests, as well as to the availability of basic goods and services. This strengthening refers not only to the rights of consumers, but also to creating an environment that enables consumers to realize and use their rights. A prerequisite for this is to create a system in which consumers are aware of their rights and responsibilities, in which they have access to information and advice, where they are aware that they are safe on the market and that there are effective mechanisms for detecting unfair business practices in the marketplace. It also means that consumers have on their disposal available effective legal remedies, as well as adequate compensation.

4. Research methodology

Based on the previously mentioned in this paper, there are 45% of internet consumers in Serbia, which is significantly lower percentage in comparison to developed countries. However, it indicates the tendency for increasing number of internet buyers in Serbia, in a future period. Starting from the analysis of factors which influence consumer's decision to purchase via internet, the question of consumer right protection and risk minimizing during internet purchase rises.

In Serbia a new law on consumer protection was adopted in 2014, and according to this valid law consumers have right to complain in the course of online purchase under same conditions in the course of traditional purchase. The Consumer Protection Associations inform consumers about their rights and responsibilities which are regulated in accordance with the Law and they have an advisory role for internet consumers. In the case of dissatisfaction with product bought via internet, consumers have the right to fail a complaint to the seller and competent inspection author-

ity. The seller is obliged to inform the consumer about the outcome of his/her complaint in written or electronical form within the legal deadlines. Inspection authorities could not influence the way in which the seller would solve consumer complaint because it is the matter of seller's business policy. Because of that, consumers are forced to address the court, but they rarely and unwillingly decide to file a lawsuit when it comes to the low cost merchandise. This is because court trials are very long and its outcome is really uncertain, but also because of the low standard of living in Serbia. According to Law on consumer protection, it is interesting to say that in the trials to 4000 euro's, consumers are free of paying court fees. However, despite this, consumers rarely file complaints in the case of non-conformity of the product.

In any case, it is necessary to develop awareness of the consumers about their rights protection during internet purchase. According to this, in the paper the research about consumer attitudes is conducted in terms of security payments during internet purchase, speed of the product delivery or possibility for filing the complaint in the case of dissatisfaction with product purchased via internet.

In this paper, the research on electronic commerce application in Serbia is conducted. The subject of the paper is to determine the level of consumer's right protection in electronic commerce in Serbia. One of the research goals is to examine in what extent consumers are informed about their rights protection during internet purchase. The question whether consumers are familiar with the Law and with the work of associations for consumers protection appears. The paper shows survey research of consumers' attitudes towards level of protection measures application when buying via internet. 130 consumers in total are surveyed on the territory of city of Kragujevac.

The goal of the research is to identify those factors which influence the decision of consumers to purchase via internet. Internet purchase gives many benefits to the buyers such as: comfortable purchase, wide range of products, speed of product delivery, time saving, simplicity and safety of financial transaction performing etc. There is the question whether consumers are satisfied with the level of right protection, primarily in terms of payment safety, speed of delivery and possibility of returning product as well as filing complaints to the company that works in traditional way and via internet. Thus, there are three main initial hypotheses:

H_1. Safety level of performing financial transaction on the internet significantly influences decision of consumers to buy products via the internet.

H_2. Speed of delivery significantly influences the decision of consumers to purchase via the internet.

H_3. Possibility for filing complaints on the internet significantly influences the decision of consumers to buy the products via the internet.

Based on the initial hypothesis, the model which indicates the significant aspects of internet purchase which should be taken into consideration during analysis of level of right protection in electronic commerce is suggested (Fig. 1).

Figure 1. Analysis of internet purchase factors
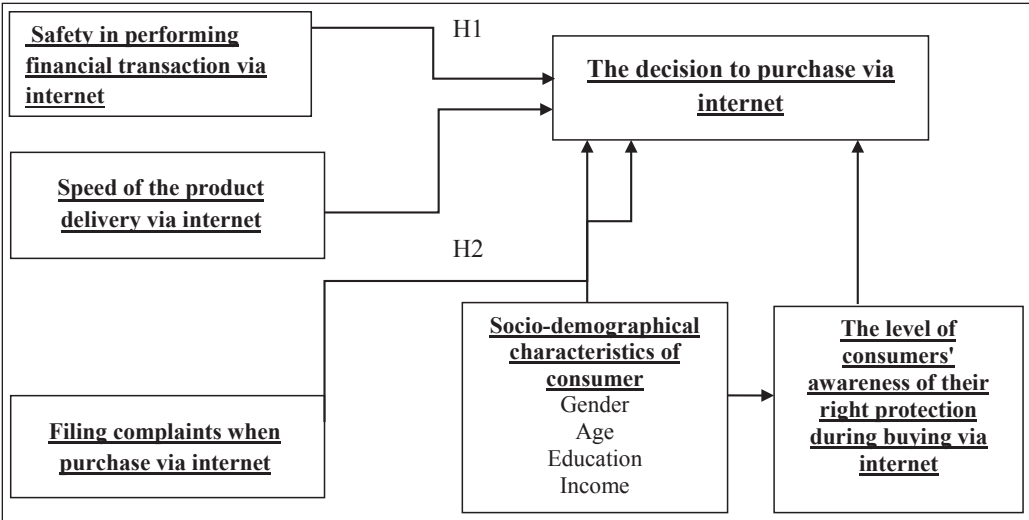
Source: own work.

During the testing of basic hypotheses, binary logistic regression was carried out in the paper. The analysis results showed that the certain factors significantly influence the consumers to decide for internet purchase or not. The research results indicated that most of the respondents buy products via internet (61.5%) (Tab. 1).

Table 1. Number of internet consumers

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid Yes	80	61.5	61.5	61.5
No	50	38.5	38.5	100.0
Total	130	100.0	100.0	

Source: own work.

Based on the testing hypotheses, it is confirmed that only safety in performing financial transactions on the internet significantly influences the consumers' decision to buy via the internet ($p = 0.0005$). The delivery speed and possibility for filing complaints in the case of dissatisfaction with the product purchased via the internet are not statistically significant variables in consumers' determining for the internet purchase ($p = 0.86$; $p = 0.96$). With this the second and the third hypotheses in this paper are refuted.

Bearing in mind the impact of consumers' socio-demographical characteristics on their decision to purchase via the internet (with performing binary logistic regression) it is proved that the respondents' age significantly influence their decision to purchase products via the internet ($p = 0.004$). With the increasing of respondents' age also, the probability that they would decide for the purchase via the internet increases.

Table 2. Factors that influence the decision of consumers to purchase via the internet

		B	S.E.	Wald	Sig.	Exp(B)
Step 1[a)]	protection of rights	.880	.748	1.385	.239	2.412
	security of payment	-1.258	.421	8.921	.003	.284
	speed of delivery	-.063	.360	.031	.861	.939
	possibility to complain	.003	.740	.000	.996	1.003
	Gender	.171	.657	.068	.794	1.187
	Age	1.459	.503	8.402	.004	4.302
	education	.447	.400	1.250	.264	1.564
	monthly income	-.450	.487	.852	.356	.638
	constant	1.639	1.341	1.493	222	5.150

a) The cut value is .500
Source: own work.

Within the research of consumers' awareness level about their rights during the internet purchase, the results show that more than a half of respondents (about 55%) are not familiar with the provisions of Law on consumer protection during the internet purchase (Tab. 3). It is interesting to mention that the level of consumers' awareness about their rights when purchasing via the internet does not influence them to decide for the internet purchase (p = 0.24) (Tab. 3).

Table 3. The awareness level about protection of consumer rights during the internet shopping in Serbia

Are you informed about consumer rights in internet shopping?		Number	Percentage
Valid	Yes	58	44.6
	No	71	54.6
	Total	129	99.2
Missing	System	1	.8
Total		130	100.0

Source: own work.

The specific analysis in this paper refers to the level of consumers' awareness regarding the protection of their rights in internet purchase depending to the profile or socio-demographical characteristic of consumers. The results of binary logistic regression showed that the level of awareness about protection of their rights in internet purchase depended on their age and their monthly income (Tab. 4).

Table 4. The influence of socio-demographical characteristic to the level of consumer's awareness about protection of their rights in internet purchase

			Predicted		
	Observed		protection of rights		Percentage Correct
			Yes	No	
Step 1[a)]	Protection of rights	Yes	26	27	49.1
		No	17	50	74.6
	Overall Percentage				63.3

a) The cut value is .500

		B	**S.E.**	**Wald**	**Sig.**	**Exp(B)**
Step 1	gender	-.286	.422	.458	.499	.752
	Age	**.757**	**.325**	**5.417**	**.020**	2.131
	education	-.143	.263	.297	.586	.867
	monthly income	**-.643**	**.315**	**4.154**	**.042**	.526
	constant	.666	.452	2.172	.141	1.947

Source: own work.

The results have confirmed that the older consumers are more familiar with the role and activities of associations for protection of consumers and the rights they have during the internet purchase. On the other hand, the results have showed that the consumers with the higher income are less informed about their rights during the internet purchase, because they are more rational when buying. One of the reasons for this is because consumers with higher income are less willing to initiate the trial in the case of dissatisfaction with the product they have bought via the internet, so for that reason they are not sufficiently informed about their rights.

5. Conclusion

Based on the research results, this paper indicates the necessity of implementing measures for protecting the consumers' rights during the internet purchase and that is primarily through ensuring the high level of security in performing financial transaction in electronic business. Moreover, it is necessary to increase the level of consumers' awareness about their rights in online shopping in Serbia. The solving of the above mentioned issues in internet purchase would influence the advancement of the total electronic business, and that would contribute to a better competitive position of the firms, both on the domestic and international market. Besides that, the companies should focus on the certain market segments of consumer, depending on their socio-demographical characteristic which should be taken into consideration while promoting and improving internet sale.

Therefore, as it could be noticed, it is of great importance that government of Republic of Serbia make additional efforts in order to increase effectiveness of consumer purchase online. Also, business entities that establish its business on modern technologies should indicate, through suitable tutorials, to importance of proper performance of purchase via internet. With increasing of safety information, as well as with emphasizing of law on consumer protection and preservation of confidential information, greater trust of consumers would be ensured and thus safety and quality of transactions performed in this way would be advanced.

Some of the limitations of conducted research would primarily refer to the fact that the research was conducted on the territory of just one city (Republic of Serbia), because the geographical dispersibility might contribute to the altered results. Also, in this paper from the analysis are omitted factors related to the level of consumer technological equipment, previous experience in performing purchase via internet, as well as media via which consumers are informed about safety and quality of transactions performed in this way. Also, in the future research which is related to the given issue, in the survey should be combined questions of open and close type in order to get more valid responses and free expressions of consumer attitudes. Another proposal would refer to identification of significant statistical difference when it comes to the safety of performing transactions according to the different product categories.

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PART III

CONTEMPORARY CONDITIONS AND CHALLENGES OF THE REGIONS AND THE TOURISM SECTOR

Chapter **25**

Knowledge Based Regional Sustainability through Industrial Districts[1]

Slavko Arsovski, Zora Arsovski, Aleksandar Đorđević

1. Introduction

In new era a knowledge becomes key success factor and because that many researchers speak about knowledge economy which is combined with digital economy. In new era "classical" approaches are not satisfactory and enterprises try to find new ways for agglomeration. One of way is industrial clusters and industrial districts with local information and knowledge spillovers, local supply of non-traded inputs, and skilled local labor pool.

Industrial districts are answer on problems of globalization especially for small enterprises because they have not enough knowledge. It has lower level of sustainability as consequences. A problem of knowledge is not only in low amount of knowledge in one territory, and fast changing in desired knowledge, collection, selection, improvement of tacit and procedural knowledge. On this reason for introducing Industrial districts a knowledge aspect becomes more significant then technology aspect. It is related to people, their knowledge, motivation, social and economic relationship in one geography defined space, with connection to other knowledge sources and supporting organizations.

The purpose of this paper is to analyze aspects of knowledge and regional sustainability and their relationships. Besides information and communication technologies related knowledge, in the paper are analyzed knowledge related to enterprise digitalization, reindustrialization through Industrial District, and leading the changes in turbulent business environment (Pavlovic et al., 2010). The goal of this article is to develop a new model of regional sustainability based on knowledge, internal in enterprises and external in social environment. For goal achievement new methodology is established, based on methods of regional development, knowledge management, change management, integration and process management, leadership, modeling and simulation, as well as project management (Arsovski et al., 2009; Pavlovic et al., 2011). This methodology is tested in one Serbian region. It is novelty presented in the paper. Results of research are theoretical

and empirical. Theoretical results are related to new integrative model and empirical in analysis of impact of different variables in model of regional sustainability. For it different scenarios are developed, with different input variables (exogenous), as well as variables of analyzed region (endogen). The results of research represent the base for development of new strategy for regional sustainable success. This article presents model of regional sustainability based on proposed integrative approach with emphasize on knowledge, skills and traits of management and leadership in the digital age. The results of simulation of digitalization effects on executive leadership and regional sustainability are presented at the end of this paper.

The article is organized in six chapters. In the second chapter is presented theory of knowledge management, and in chapter three theories of industrial districts and knowledge spillovers. The focus of research i presented in chapter four in which is presented model of knowledge based sustainability in Industrial districts (Tadic et al., 2013). Results of analyses of one Serbian region using Artificial Neural Network presented in chapter five. This approach is base for defining impact of variables on regional sustainability, which is base for conclusions presented in chapter six.

2. Literature review

2.1. A knowledge management theory and practice review

Each enterprise i.e. organization is system composed from employees and other resources oriented to mutual goal. Each employee has some knowledge, general and, specific for it's job. Problem is in organization if this amount of knowledge in organization is not systematically collected, developed, directed and exploited. It has different faces. For purpose of the research is important technology of learning organization which includes: (1) future learning, (2) seeing hidden strategic opportunities, and (3) discovering untapped leverage (Arsovski et al., 2017). King (2009) analyzed relations among knowledge management and organizational learning. He emphasized problem of managing asymmetries in transferring tacit knowledge, information technology as enabler of knowledge management and procedural governance in knowledge – sharing alliances.

Liebowitz (2011) analyzed problem of gaining competitive advantage with globalization and through virtual worlds. For this research is useful aspect of innovation through social networking in enterprise or knowledge transfer through digital nets.

Maier (2004) analyzed different aspects of knowledge management systems in enterprise and relationship between strategy and environment. He emphasized goals of knowledge management especially improve the handling of existing knowledge, and improve the sharing of knowledge.

Watson (2003) analyzed techniques for building corporate memories. In his Case Based Reasoning he positioned memory and defined paths for knowledge retrieving, reuse, review, refine, and revise. It could be supported by appropriate architecture, with Case Based Reasoning server, web client, application server, and other data bases.

Lichteuhalter (2008) analyzed problem of retaining knowledge outside a firm's boundaries. In his research he approved proposition related to positive impact of collective learning process, prior experience in external knowledge retention, and firm's organizational integration on relative capacity. On other side, consequences of relative capacity are better performances of firm's inter organizational relationship, better aligning with corporate strategy, and balance between relative

capacity and transformation capacity. The last conclusions are very important for our research presented in the article.

An aspects of impact of knowledge management on competent enterprise analyzed Wiig (2008). He distinguished strategic, tactical, and operational knowledge management related aspects, plans, initiatives, and activities. In analysis of complexity of work and appropriate competencies of workers he identified five areas with different profiles of knowledge. In his model enterprise performance could be realized starting from knowledge and other intellectual capital assets and through individual actions, department's and business function's actions could be consolidated enterprise behavior.

Sheffild (2005) analyzed knowledge management through analogy with famous V-model from information technologies literature. He concluded that the top half of V-model reduces equivocality about tacit knowledge and the bottom half of the V-model reduces uncertainty about explicit knowledge.

In research of Michalewicz et al. (2007) are presented characteristics' of complex business problems, with emphasize on time-changing environment, multi-objective problems, and modeling the problem. Authors defined structure of on adaptive business intelligence system with three modules, i.e.: (1) optimization module, (2) prediction module, and (3) adaptability module. Prediction methods cover dominantly mathematical and heuristic methods. For optimization also are used different techniques with: (1) the representation of the solution, (2) the objective, and (3) the evaluation function.

2.2. An industrial districts theory and practice review

Research related to industrial districts covers theoretical and practical themes and results. So Eger M. (2014) collected both types of research. For purpose of our research are significant local systems of innovations. He used structure of on innovation system from Arnold (2001) with: (1) infrastructure (banking, IPR and information, innovation and business support, and standards and norms), (2) political system (government, governance, and R&D policies), (3) industrial system connected with (4) education and Research System Through (5) research institutes and brokers.

Sforzi and Boix (2015) analyzed theory and practice of industrial districts and emphasized statement "Regional science is primarily a social science. It is concerned with the study of man and statically form which his continuous interaction with, and adaptation to the physical environment take" of authors Hägerstrand and Becatini (2003).

In famous book "Handbook of Industrial Districts" authors Becattini, Bellandi and De Propris (2009), in section five they analyzed knowledge and learning aspects. In this article author analyzed the spatial dimension of creativity with two dimensions: (1) local economic development and (2) innovation processes. For both of them is important concept of milieu innovator developed by the GREMI. For creativity author also emphasized "proximity" based on categories: (1) cognitive (based on knowledge gap), (2) organizational (based on control), (3) social (based on trust-social relations), (4) institutional (based on trust-common institutions), and (5) geographical (based on spatial distance). In her concept milieu is proactive environment which generates innovation and knowledge transfer, i.e. goal oriented creativity. A New Creative Milieu has five main elements: (1) creative habitat, (2) creative spillover for creative artists and creative industries, (3) lateral proximity, (4) creative absorptive capacity, and (5) creative economies. In this concept significant

role has Creative Capacity Culture with characteristics: (1) culture/creativity as capacity, (2) culture/creativity as sources of innovation, (3) focus on creative class, knowledge economy, information and communication technology, (4) focus on innovation process, creative district/cluster, (5) creative industries, and (6) creative cities.

Arikan and Schilling (2016) analyzed structure and governance in industrial districts as implications for competitive advantage. They emphasized need for coordination from aspects: (1) complexity (demand and knowledge-related), and (2) imperfect separability (component or processes are not enough independent). They also defined archetypes of industrial district dimensions. In this approach four quadrants are structured with low and high levels of: (1) needs for coordination, and (2) centralization of control. For low-centralization-low coordination proximity plays an important role in knowledge spillovers. Diffusion of knowledge depend on how much are complex tacit knowledge.

Belandi and De Propris (2015) analyzed three generations of industrial district with emphasizing mark 3 in era of global production and social networks. For it the size of firms varied from micro and small to medium and large, concentrated in group to enhance financial capacity for purpose to fostering creativity and innovations. These transformations are supported by international communications. Economy inside industrial district is "wired" with global-local value chains. In this kind of industrial districts, resilience of information systems also higher than in previous two industrial districts.

2.3. A quality theory and practice review

For development and establishment of industrial district a quality aspect is very significant. Quality has a lot of faces, as quality of product, quality of organization/enterprise, quality of resources, quality of business and eco-environment, etc. Because industrial district is regionally focused, a quality problem is addressed by:
- region (enterprises, regional market, regional government, regional infrastructure),
- environment (global market/competition, global suppliers, global infrastructure, state and global regulation).

In this paper are analyzed dominantly enterprises in region, regional infrastructure and regional market, with emphasizing on knowledge. It is analyzed in papers related to:
- business value and Total Quality Management (Chung et al., 2008; Yang & Yeh, 2009; Pilcher & Jack, 2008),
- strategic aspects of quality (Wing et al., 2007; Yang & Yeh, 2009; Setijono & Dahlgaard, 2007; Jolayemi, 2008),
- relation among knowledge-and quality management (Duran et al., 2014; Eppler, 2001; Akdere, 2009; Honarpour et al., 2012; Nestic et al., 2015; Tadić et al., 2017; Arsovski et al., 2012),
- quality models (Jaju et al., 2009; Yousefie et al., 2011; Chen et al., 2009).

2.4. A resilience review

Resilience is related on:
- enterprises (Aleksić et al., 2014; Aleksić et al., 2013),
- environment (Tadić et al., 2014),

- global business, etc. (Arsovski et al., 2015),
- relation among quality infrastructure and resilience (Labaka et al., 2016) and manufacturing infrastructure (Sakakibara et al., 1997).

2.5. A complexity management review

A complexity is analyzed from aspect of:
- complexity of enterprises,
- complexity of nets,
- complexity of technology,
- complexity of regional structure,
- complexity of clusters and districts.

A technology complexity is analyzed based on papers of (Angus & Newnham, 2013; Magee, 2012). Aspect of complexity of networks is analyzed on works Holland (2001), and on White (2003). Different aspects of complexity of enterprises are analyzed by (Segel, 2000; Prokopenko, Boschetti & Ryan, 2008). A complexity approach of industrial clusters and industrial districts is analyzed on basis work of Dilaver, Bleda and Uyarra (2014).

2.6. A leadership review

For industrial districts leadership function is related to:
- enterprise,
- regional government,
- political leaders,
- other leaders (technology, knowledge, education, environmental protection, books, etc.).

Aspect of leadership impact on functioning industrial districts is analyzed in works of (Zheng & Muir, 2015; Mishel, Pichler & Newness, 2014; Geier, 2016; CIPD, 2008). In these papers and broader literature are highlighted some characteristics of leaders applied for industrial districts.

3. Model of knowledge based regional sustainability

On the basis of literature review is modeled regional sustainability from two groups of variables (factors):
- environmental factors and
- factors related to enterprises in industrial districts.
  Environmental factors are divided into sub-cultural factors related to:
1. urban renewal,
2. economic renewal,
3. cross-fertilization, and
4. serendipity.
   The second group factors are also cultural type. It consists from sum-factors:
1. creative habitat,
2. creative spillover,

3. lateral proximity,
4. creative absorptive capacity, and
5. creative economics.
    The third group of sub-factors is related to environment:
1. business environment,
2. eco environment,
3. job environment,
4. knowledge environment, and
5. government/global business.
    These factors are related to:
- knowledge factors in enterprises (expressed and tacit knowledge),
- organizational, management-leadership and technological factors (creativity, centralization, coordination, complexity, and resilience),
- factors related to results and outcomes (quality, innovativeness, new jobs, and business results), and
- regional sustainability.

In Figure 1 is presented base model of regional sustainability as function of knowledge in industrial district.

Based on previous review is developed operational model of impact of knowledge on regional sustainability in one region. In this model input variables (factors) are: (V1) competitivity index and (V2) level of stakeholders needs.

Figure 1. Base model of regional sustainability as function of knowledge in industrial districts
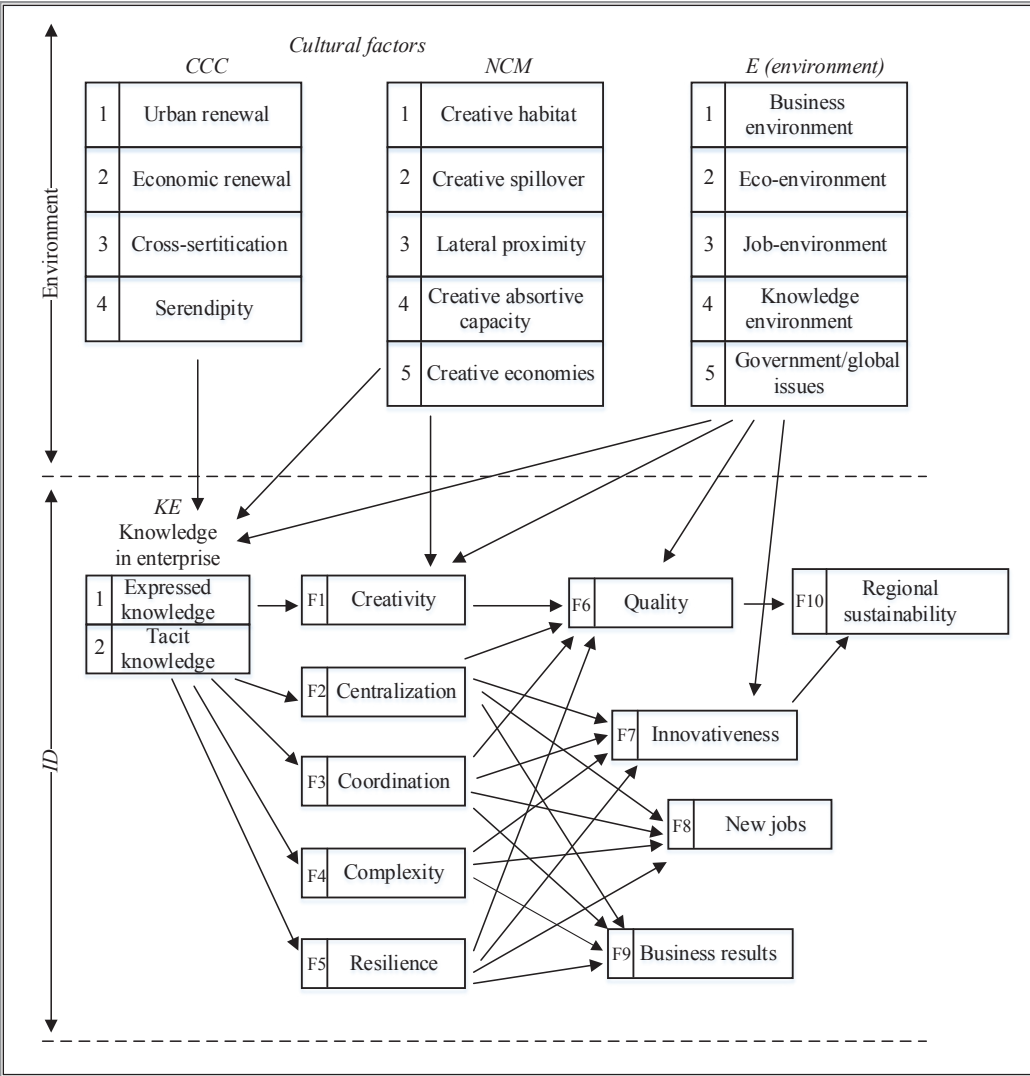
Source: own study.

Values of these factors and other factors in this model (Fig. 2) are derived from statistical analysis of 33 enterprises in region of Central Serbia.

These inputs come from business and they are different for each enterprise in the sample. Theoretically, they have influence on factors of existing human resources level: (V3) leadership level, (V4) management level, (V5) change management level, and (V6) common other human resources level. According appropriate questioner for each factor (variable) is calculated mean value for each enterprise.

Figure 2. Operational model of regional sustainability
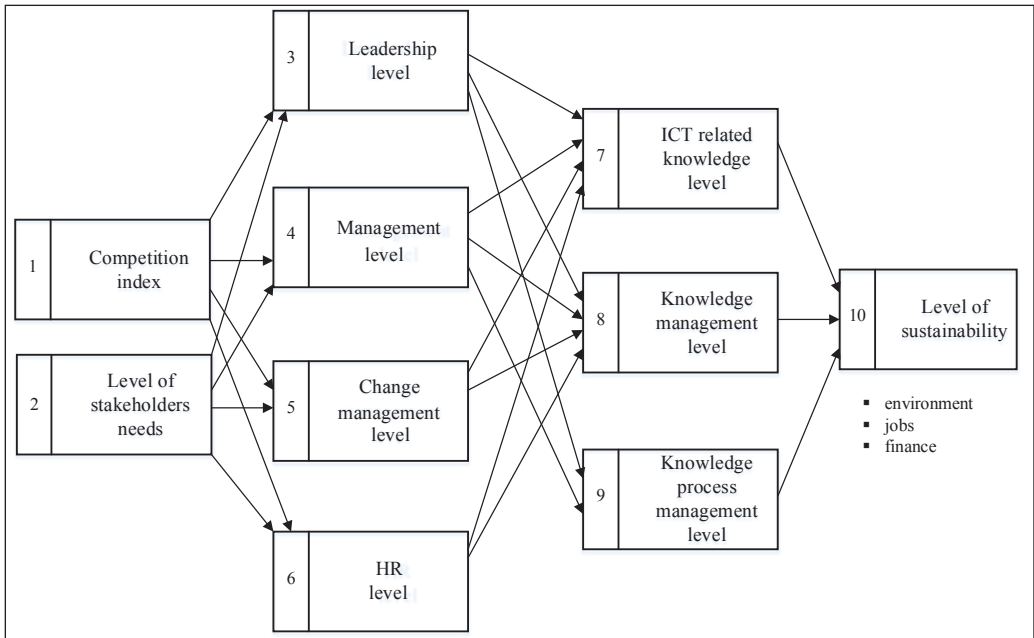
Source: own study.

A next group of interconnected variables in the model are: (7) ICT related knowledge level, (8) knowledge management level, and (9) knowledge process management level. Also, each of these variables is composite and using statistical tools is calculated mean value, variances and internal reliability index expressed by Alpha Cronbach Coefficient.

An output of the proposed model is level of regional sustainability from view of each enterprise. This level is calculated by values of impact on environment, jobs, and finance.

For verification of this model has used Artificial Neural Network approach. For analysis of sustainability of this approach are used papers (Nestić et al., 2015; Erić et al., 2016; Stefanovic et al., 2017; Peko et al., 2017, 2018; Arsovski et al., 2009).

These inputs come from business and they are different for each enterprise in the sample. Theoretically, they have influence on factors of existing human resources level: (V3) leadership level, (V4) management level, (V5) change management level, and (V6) common other human resources level. According appropriate questioner for each factor (variable) is calculated mean value for each enterprise.

A next group of interconnected variables in the model are: (7) information and communication technology related knowledge level, (8) knowledge management level, and (9) knowledge process management level. Also, each of these variables is composite and using statistical tools is calculated mean value, variances and internal reliability index expressed by alpha Cronbach Coefficient.

An output of the proposed model is level of regional sustainability from view of each enterprise. This level is calculated by values of impact on environment, jobs, and finance.

For verification of this model has used Artificial Neural Network approach.

4. Verification of the model

On the following figures modeling results are given. On the second level first observed variable is leadership level. In the Figure 3 are presented real data (*Series1*) and predicted results (*Series2*) for the leadership level. The results are based on the predictions of Artificial Neural Network approach, where the input values are from the first level competition index and level of stakeholders needs variables. Based on these values, prediction values of leadership level are determined.

Figure 3. Real data and predicted values of leadership level
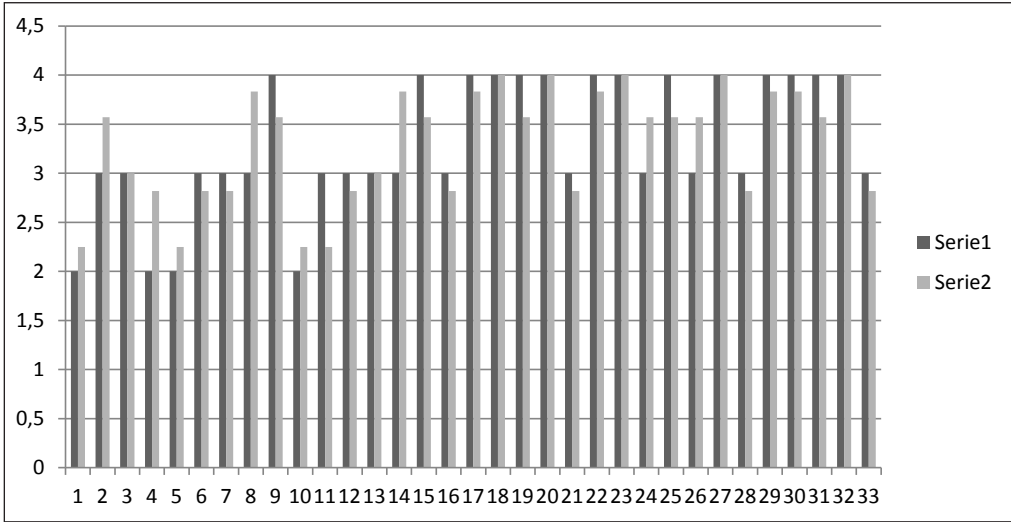
Source: own study.

For variable 6 (Human resources level) similar diagrams are obtained (Fig. 4).
On the third level, with the further propagation of artificial neural networks prediction of knowledge level are obtained.

Figure 4. Real data and predicted values of HR level
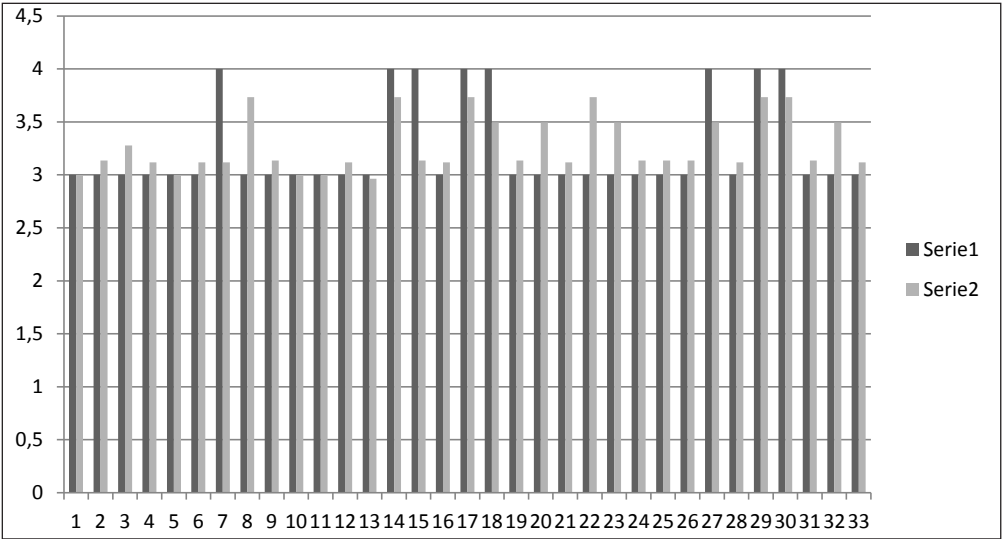
Source: own study.

On the Figure 5 differences between real and prediction data are presented for variable 9 (knowledge process management level).

Figure 5. Real data and predicted values of Knowledge process management level
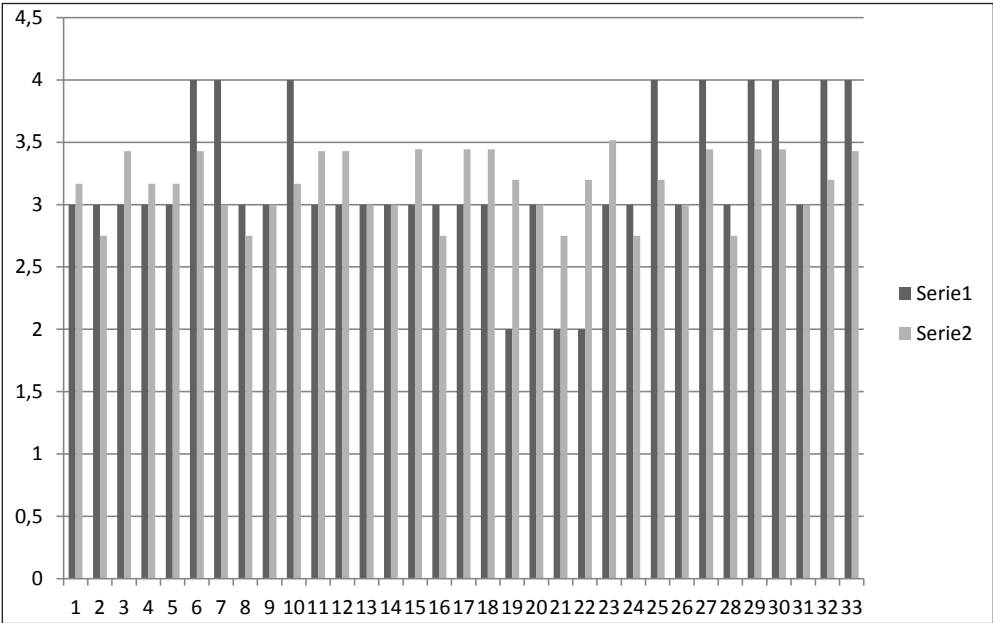
Source: own study.

At the end, the influences of variables 7, 8 and 9 on the variable 10 are modeled. Character-istics of artificial neural networks modeling are presented on Figures 6 and 7, for the real and predicted data.

Figure 6. Correlation coefficients between real input data and predicted values for the Level of sustainability
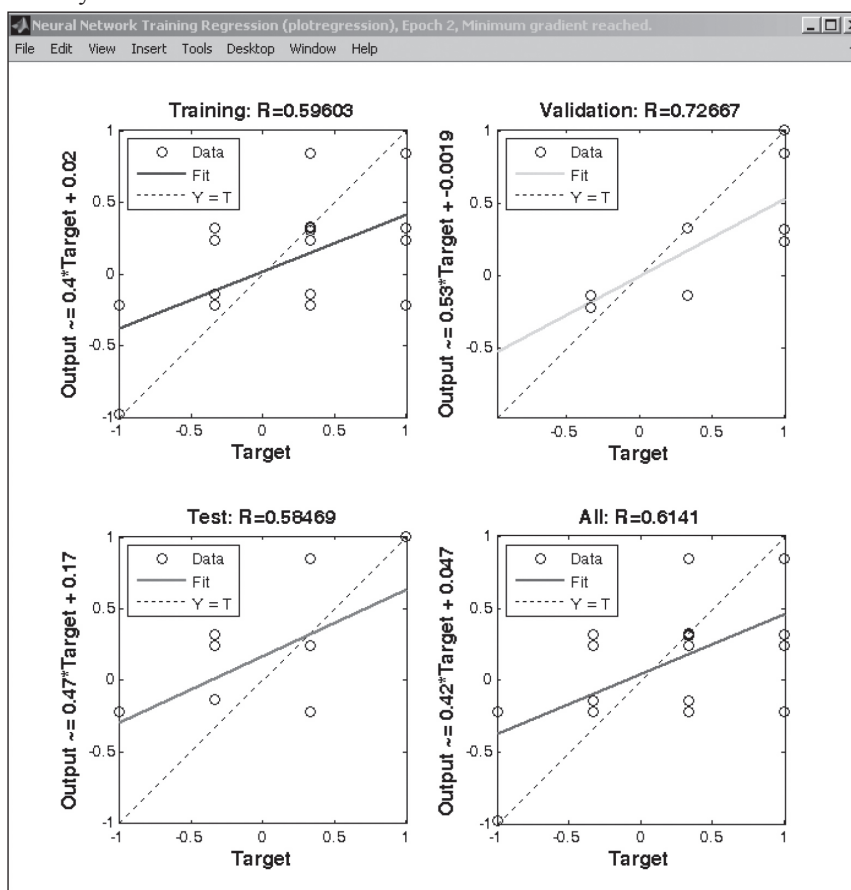
Source: own study.

By analyzing the values from the Figure 7 great compliance between real and predicted data were noticed, which indicated that the artificial neural networks modeling has been satisfying. The output has shown the satisfying level of correlation (higher then 0.6, which industrial districts shown on the Fig. 7).

Previous analysis in related to the companies in the sample. Through the project of industrial districts development in Central Serbia, it is important to influence on the starting variables of the observed companies included in industrial districts. For this purpose, predictions are con-ducted that in three years changes will be:

- completion index be higher for 5%,

- level of stakeholders needs be higher for 6%,
- level of V3, V4, V5 and V6 be higher for 4%,
- level of V7, V8 and V9 be higher for 10%, and
- expected level of V10 be higher for 3%.

Figure 7. Real data and predicted values of level of sustainability
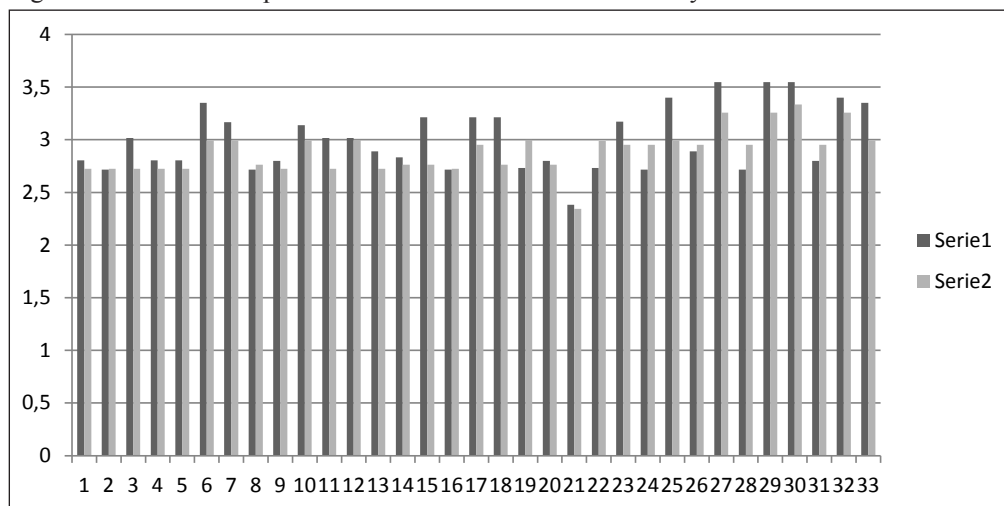
Source: own study

5. Conclusion

A regional sustainability is complex term and in praxis depends from various factors. In the paper are analyzed knowledge, process management, leadership, digitalization and new/old concept of expected level of V10 be higher for 3%. Using modeling and simulation methods artificial neural networks analysis are performed and hypothesis about impact of knowledge on regional sustainability through industrial districts. The simulation results proved expectations about testing accuracy and reliability of applied methods. Also, on relative small sample is viewed goal achievement with very high accuracy and reliability.

In next research the proposed model will be redesigned with incorporating aspects of process digitalization and opportunities of quality of life or well-being.

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Chapter **26**

Use of Social Capital in Regional Development

Magdalena Gorzelany-Dziadkowiec, Julia Gorzelany

1. Introduction

Regional development is not clearly defined, nor is there a universally understood and accepted interpretation of meaning. Both determinants of regional development are differently categorized by persons dealing with this issue, as well as the region itself is not clearly classified. In the area of exploration of determinants of regional development, social capital, which in the last decades has been assumed to be valid. Particular attention was paid to the social capital after the publication of the work of R. Putnam, who paid particular attention to the fact that much higher levels of economic development in northern Italy were strongly linked to the quality of social ties in the region. He did not define exactly what he had justified, but rather defined his features quite well.

These premises have been the inspiration for conducting research into the impact of social capital on regional development. This article puts the main research hypothesis that the identification of factors affecting the creation of social capital in the municipality is essential for its development. Specific hypotheses: social attitudes have a very significant impact on the formation of social capital; social consciousness and the skills and qualifications of people working in public administration and the people are important in creating social capital; non-governmental organizations and social leaders are the determinants of social activity.

To prove the research hypotheses, the research (both quantitatively and qualitatively) was carried out in the municipalities of Myślenice and Michałowice. In quantitative research, analyzes of changes in the education structure and in the structure of non-governmental organizations were conducted in the years 2007-2017. In terms of qualitative research, questionnaires were used to identify factors contributing to social capital in the region.

2. The concept of the region and the determinants of its development

The conception of the Council of Europe has forced the Member States of the European Union to unify the division of the territories of countries into regions by establishing a common clas-

sification of territorial units called the Nomenclature of Territorial Units for Statistics (NUTS)[1]. In accordance with Regulation (EC) No 1059/2003 of the European Parliament and of the Council of Europe of 26 May 2003 (OJ L 154, 21.6.2003, as amended), the NUTS classification rules include hierarchies, administrative divisions and population criteria. On this basis, three levels of NUTS were broken down as shown in Table 1.

Table 1. Classification of Territorial Units for NUTS Statistics and their distribution

NUTS level	Lower population limit	Upper population limit	Number of units in Poland	Naming
NUTS 1	3 000 000	7 000 000	6	Regiones
NUTS 2	800 000	3 000 000	16	Voivodships
NUTS 3	150 000	800 000	66	Subregions

Source: http://www.stat.gov.pl.

To the above classification, it should be added that in addition to the three-stage NUTS division, the European Union also includes 2 further divisions in LAU 1 and LAU 2 (Local Administrative Units), which are not specifically regulated by the regulation, but only listed in Annex III of the Regulation[2]. In the nomenclature, units LAU 1 and LAU 2 are also referred to as NUTS 4 and NUTS 5, respectively, and their territorial scope should be identified with poviats and cities with district rights (NUTS 4) and municipalities (NUTS 5).

In Poland since 1999 there is a three-tiered territorial division – administrative (three levels of local government) for municipalities, counties, voivodships. According to this division, all three levels of territorial division in Poland can be considered as regions. In the theory and practice of regional policy most often the region is identified with the highest level of territorial division of the country (i.e. voivodships) and counties and municipalities are treated as local units (Pajak, Dahlke & Kvilinskyi, 2016). Identifying the region with the highest level is not wrong but cannot be also treated as the only and the most appropriate. Narrowing the concept of the region to the voivodship results from the necessity to maintain the normative order, including the cautiousness of terms and is functionally detached from the assumptions adopted in the aforementioned definitions. In view of the above, the aim of this work is to treat the terms of the county and the municipality as synonymous (Juja, 2012, p. 172). Thus a region is understood as a local self-governing community and self-governing community – i.e. a municipality and a county, which are independent and autonomous in action in the sphere of public affairs of local importance. In other words, the region is a separate part of the area in which economic and social activities are organized and controlled in such a way as to achieve the best possible competitive position ensuring its development.

It is worth mentioning here the definitions of the region according to different authors. I. Pietrzyk (2000, p. 213) defines region as culturally or historically defined territories as well as areas separated by administrative and political division and isolated within economic space. R. Domanski (2007, p. 23) defined the region as an area that constitutes a single or coherent whole resulting from the nature of components and spatial relationships, separated from a larger area by a specific

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[1]   See more at: http://www.europarl.europa.eu/aboutparliament/ / Display Ftu.html? FtuId = TU_5.1.6.html.

[2]   See more at: www.stat.gov.pl/gus/5840_7551_PLK_HTML.htm.

criterion or criterion, or by the value of a structure defined by interdependent areas of human activity in the area under consideration. G. Światowy and J. Lisewska (2004, p. 309) define the region as follows: the region is not only the institution resulting from the administrative division of the country, but also the people living in the area and the organizations operating there. And in this view, social capital will be considered as one of the determinants of regional development.

The immanent feature of the region is its development, or the ability to make changes in political, economic, cultural, technological or environmental terms. Regional development can be defined as a steady increase in the standard of living of people and economic potential on a large territorial unit (Hausner, 1999, p. 22). This approach allows for consideration of regional development in terms of quantitative and qualitative changes in the region. Local development refers to the changes taking place in the municipality or district, but according to many authors, this is a very complex concept, sometimes differently defined.
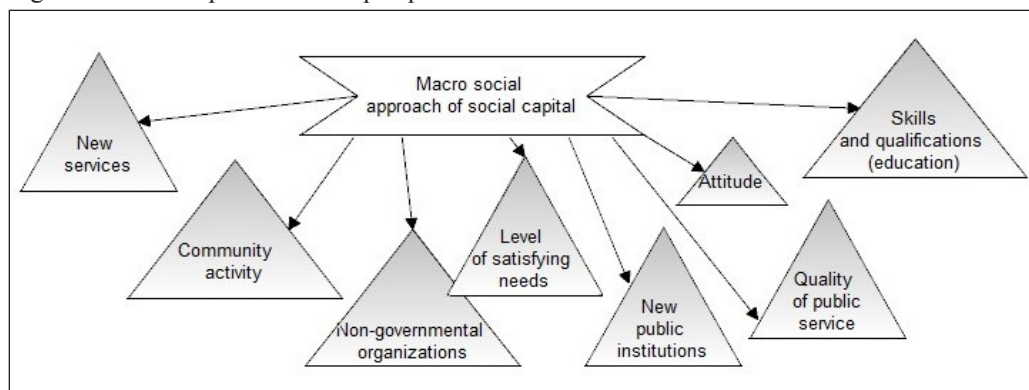
3. The role of social capital in regional development

As mentioned earlier one of the very important determinants of regional development is social capital. Literature can find many definitions of social capital because it is a term ambiguous. Capital is a resource that brings many benefits in the form of income (Brol, 2008, p. 314), as well as a source of competitive advantage. P. Ekins has attempted to synthesize inquiries about various forms of capital and has created a model of four capitals. He distinguished the following capitals: natural, economic, human and social. Nowadays, social capital is considered one of the most important development factors. The concept of social capital to modern theory was introduced by the French sociologist P. Bourdieu. In his concept he identified three capitals: economic – covering material, cultural resources – including norms, values and social. Social capital was classified in the category of private property and according to him, it meant the number of acquaintances the individual possessed. As a complement to these three capitals, the French sociologist has identified still symbolic capital, which has identified with the features of the dominant power – prestige and reputation (Kuchmacz, 2016, pp. 71-73).

Simply put, social capital can be defined as relationships that form between people in both formal and informal activities that take into account credibility, trust, honesty, solidarity. Networking allows members to access information and reduce transaction costs (Przymeński, 2005, p. 23). J. Coleman defines social capital as a society that has confidence, norms and connections through which management efficiency (Putnam, 1995, p. 258) or another definition of F. Fukuyama (2001, pp. 7-20) is said to be a set of informal values and ethical norms that are common to members of a particular group and allows them effective co-operation. M. Gajowiak (2012, p. 32) defines social capital as a kind of regulator of social relations, which determines human behavior both on the level of individual activity and on group activity which is undertaken in economic, social and cultural life.

No matter what definition of social capital we adopt, it must be stated that the concepts of social capital refer to three levels – the microsocial, where capital is presented as a resource of individuals, to the mesosocial level – where it is a resource of social and macro-social groups, where it is considered to be one of the regional and national development factor (Gajowiak, 2012, pp. 25-26). The structure of social capital in macro terms is characterized in Figure 1.

Figure 1. Social capital in macro perspective

Source: own elaboration.

When analyzing the structure of social capital and local politics, it is possible to perceive the repeatability of the strategic documents related to the quality of life of the inhabitants and regional development. If social infrastructure is a factor in regional development and is a tool for generating and changing the whole economy, society and the environment, it is important to recognize that the need to maximize the fulfillment of social needs is an important element of regional policy (Hołuj, 2016, p. 226). So, local authorities should not only write in a document such as the Development Strategy specific actions, but should also undertake them. Those actions are: to improve the set of services, to meet the needs of the population, to stimulate the activity of local communities, to create conditions for the activities of the organization of the third sector, to modernize existing ones or to create new facilities for public institutions. The social infrastructure thus created is an important factor in the competitiveness of the region (area) and determines its development. Failure to take action in the areas described above is an important barrier to regional development.

4. Use of social capital in regional development – empirical analysis

In order to achieve the aim of the work and to verify the research hypothesis, the research was carried out in two municipalities: Myślenice and Michałowice. The study was conducted in two stages. In the first stage, statistical data on quantitative areas of social capital was analyzed. In contrast, in the second stage of the research the quality measures were analyzed using the questionnaire. The questionnaire was addressed to residents and employees of public institutions.

In the first stage of the study, statistical data on education, public institution infrastructure and activity of the third sector organization were analyzed. The results of the structure of education are illustrated in Figure 2.

Figure 2. Structure of education of people living in the municipalities of Myślenice and Michałowice
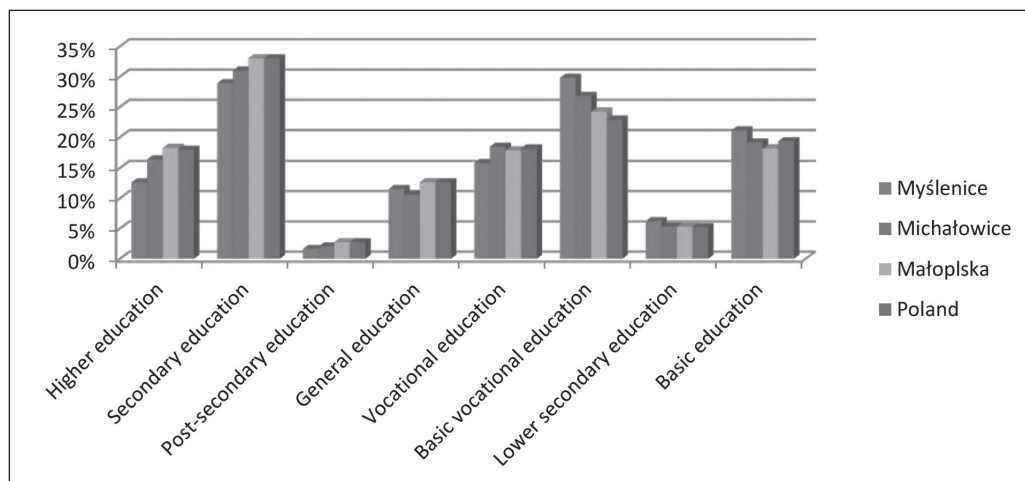
Source: own elaboration based on Poland statistics in figures – http://www.polskawliczbach.pl.

When analyzing the set out in Figure 2, it can be concluded that the evaluation of social capital through the prism of education has been correct. In the municipality of Myślenice and Michałowice people with primary, lower secondary and vocational education are more than average in Małopolskie and Poland. The majority of people with basic vocational education were in the municipality of Myślenice. Regarding secondary and post-secondary education, post-secondary, general and higher education, the surveyed communes are worse than indicated for Poland and Malopolska. In Michałowice there is 4% more people with higher education than in Myslenice, although Michałowice is a village municipality. Basic vocational education, which is characteristic of both municipalities, is reflected in the entrepreneurship of both regions. Both communities are of similar size and are characterized by indigenous, small businesses where the owners have a vocational education because they were needed to open the company and to train in the professions. When referring to social capital, it can be said that education is not the main determinant of it.

By analyzing another area of NGOs, it can be said that the number of these organizations is large and the associations are predominant. In Myslenice there are 147 active associations and 20 foundations[3]. Unfortunately, data on the Michałowice municipality have not been obtained. Michałowice and Myślenice municipalities are active in the communities of Michałowice and Myślenice. They support the development of communities and build social, human, economic, ecological and economic capital. In Michałowice those are: Local Action Group The North Koruna Association, Local Action Group Under the pilot program Lider +, the Małopolska Association of Entrepreneurs Michałowice, the Association of Friends of the Land Michałowice "Nad Dłubnia" in Michałowice, Association of Rural Housewives Club "Under the flourishing Jabłonia", Association for the development of children and youth "Full Chata", Association of the Institute of Streams, Association Club Sport Horse Riding "Szary- Michałowice"[4]. In Myślenice, one should

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[3]   See more at: http://www.myslenicki.pl/pl/content/category/26/94/192.

[4]   See more at: http://www.michalowice.malopolska.pl/gmina/organizacje-pozarzadowe.

distinguish: Myślenice Economic Development Agency, Local Action Group between Dalin and Gościbia, Support and Development Group for Children in Difficult Family Situation, Myślenice Rescue and Rescue Group with Dogs. The results show that there is social activity and willingness to act. Third sector organizations are to a large extent associations and sports clubs that take care of the development of physical culture among children and young people.

While analyzing the institutional infrastructure, we note that no new facilities are arriving, although the museum is planned to be built in Myślenice (which raises resistance). The authorities take care of the maintenance and repairs of those facilities already in the city. In Myślenice are among others: Aqurius water center; Public library – modern, very well equipped; sport and entertainment hall; shooting range; A large number of bicycle paths; new playgrounds; MOKiS. The situation is similar in Michałowice, where there are many bicycle paths, meetings, festivals, events such as: religious concerts, rodeo rallies, performances, regional product festival.

At the next stage of the study, a questionnaire was developed in which residents were asked to assess social capital in their regions and to answer whether social capital influenced regional development. In the questionnaire, the respondents stated the extent to which they agree with the questionnaire. The five-step Likert scale was used, where the responses were as follows 1 – I strongly disagree, 2 – I disagree, 3 – I have no opinion, 4 – I rather agree 5 – I strongly agree. In the municipality of Michałowice, the return of completed questionnaires were 120, whereas the municipality of Myślenice – 135. The results of the studies are shown in Table 2, Michałowice municipality is emphasized. Without the emphasis there is Myślenice municipality. As the results were the same, they are summed up together for both municipalities.

Table 2. Assessment of social capital in the researched regions and its influence on regional development

Structure of social capital	Grading scale				
	1	2	3	4	5
LOCAL COMMUNITY CHARACTERIZES:					
A collection of common values	-	10	30/40	40/40	20/40
Taking common social action	-	20	30/20	40/40	10/40
Mutual inspiration for action	-	30/10	40/20	20/40	10/30
Similar Attitudes and Behavior	-	40	10/20	30/40	20/40
Mutual support in crisis situations	-	-	20	30/40	50/60
Willingness to volunteer work	-	-	30/30	30/40	40/30
Activity and willingness to help	-	-	20	40/60	40/40
Public-legal partnership	40	40	-	10	10
Trust the authorities	30	10	20/20	20/40	20/40
IN THE COMMUNITY:					
Social initiatives are being taken up	-	-	20	50	30
New free sports and leisure facilities are being built	-	40/60	10/40	40/-	10/-
Amphitheaters, cinemas are set up	30/-	50/70	20/30	-	-
Occasional events (festivals, festivals, competitions) are organized	-	10/-	20/-	10/40	60/40

Prevention campaigns are supported	20/-	10/-	40/20	10/60	20/20
Support for upgrading skills (eg learning foreign languages, understanding art)	20/-	20/-	40/40	10/30	10/30
Formal offers are available for children and young people to help meet their needs (eg sports clubs, dance sections, chess)	10/-	-	10/20	20/50	60/30
Support is being provided for the purchase of modern technical equipment to improve the quality of services provided by public institutions	-	30	50	10	10
Enables individuals to have free access to information	20/-	30/-	30/20	-/60	20/20
It is supporting the authorities for purposeful social action	20/-	20/-	30/30	20/40	10/30
Programs that build open social attitudes that teach empathy are implemented	10/-	40/-	30/20	10/40	10/40
Social capital influences the development of the region	-	-	-	20	80
These activities build social capital	-	-	-	30/20	70/80

Source: own study based on research.

When analyzing the results of the conducted research it is noted that Michałowice municipality was slightly better evaluated than the municipality of Myślenice. The characteristics of the local community in both cases have been evaluated in a comparable way, with only two characteristics showing the difference in responses, namely in similar attitudes and behaviors, and in trust with the authorities. As far as Myślenice is concerned, 40% of the respondents stated that the local community did not have similar attitudes and behaviors, and 20% did not, and only 50% stated that similar attitudes existed. In the case of Michałowice, 20% of the respondents in the answer to this question stated that they did not think the other 80% answered yes. Regarding trust in the municipality of Michałowice – it exists. In the Municipality of Myślenice. 40% of respondents said that they did not trust the authorities and 20% did not, only 40% responded positively.

Taking under consideration another research area, it can be stated that there are definitely more social capital building activities implemented in Michałowice municipality than in Myslenice. Supporting prevention campaigns, supporting skills development, free access to information, support from the authorities for targeted social action, implementation of programs to build open attitudes in the municipality of Michałowice, responded positively to the majority of the respondents. What is also reflected in the implemented social campaigns[5]. In the municipality of Myślenice, the high response rate to these questions was negative or neutral.

The research has allowed to prove the hypothesis that social capital influences regional development – 100% of respondents in both municipalities responded in such a way. Activities that were asked in the questionnaire by the surveyed also in 100% are building social capital. The conclusion is that both municipalities are on the right way to build social capital, but the municipality of Myslenice must work more to improve the area.

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5   See more at: http://www.kampaniespoleczne.pl/kampanie,sekcja,20,edukacja.

5. Conclusion

In conclusion, it can be stated that social capital influences regional development. In the analyzed municipalities, it is possible to build social capital by undertaking various activities. Studies have also shown that in the two studied municipalities, society has some common characteristics. Quantitative research has also shown that both municipalities are moving in the right direction in building social capital.

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Chapter **27**

Religious Tourism in the Cities (by the Case of Krakow)[1]

Renata Seweryn, Agata Niemczyk

1. Introduction

Cities have always been the destination of tourist trips. However, before the second half of the 20th century they had not been considered a mass phenomenon. Side by side with the most obvious forms of city tourism, i.e. sightseeing, cultural, entertainment and shopping the cities also attract the participants of religious tourism. Visits of the latter group are characterized by the way they use diverse elements of local infrastructure. The question is if the religious tourists have the same preferences in relation to them as other visitors? The purpose of this article is to try and answer this question.

The article is of theoretical and empirical nature. Theoretical considerations concern cities as tourist space, and in terms of urban tourism offering a complex tourism product. One of its sub-products is religious tourism described in the article through the prism of definition. The area of exploration was Krakow, which was one of the most important religious sites of worship for Christians already in the Middle Ages in Poland. It was mostly due to the presence of numerous holy places related to both the cult of relics and images either blessed or famed for graces. Currently there are new pilgrimage sites visible in Krakow: Sanctuary of the Divine Mercy in Krakow-Łagiewniki and the John Paul II Institute *Have No Fear!*. It is hard not to appreciate the role of religious tourism in Krakow, which is now treated as one of the significant segments of the visitors to the city. Thus, by means of the results of the study of tourist movement in Krakow (conducted on the City Council order under the supervision of the Lesser Poland's Organisation for Tourism) statistically significant differences between tourist behaviour of religious visitors and other visitors to the city in 2016 were identified (by means of Pearson's chi-squared test and U Mann-Whitney test). These data allowed a simultaneous verification of research hypotheses specified on the basis of the national and foreign subject literature review.

2. The city – space for tourist movement

Cities are indicated amongst many areas of reception selected by tourists. According to Ch.M. Law (1993, p. 1) they are the most important places in the world visited by tourists.

The city is a typical example of a tourism product of the area, which according to E. Dziedzic (1998, p. 23) is defined as the whole consisting of tangible and intangible elements which are the basis of the image and expectations created in tourist's mind relating to the stay in a particular place. Another approach to the category well-known in the subject literature is one of V.T.C. Middletone and R. Hawkins (1998, p. 82). Quoted authors claim that "destinations (areas of tourist reception) can exist on the market as places recognized by tourists, thus they can have their own recognizable brand and create their own system and procedures of management". Another attitude is promoted by V.F.C. Goncalves and P.M.R. Aguas (1997, p. 24) who "treat a destination as a region which has physical, historical and ethnographic features that make it different from other and allow developing one or more forms of tourism to make it attractive for tourists". Modern tourists, tired of dynamics of everyday life are more willing to search for simpler form of relaxation based on the "back to the past" concept while being aware of the meaning of protection of natural resources that may irrecoverably disappear. As a result, tourists strive for "authenticity both in natural and cultural environment as well as gaining deep experiences" (Zaręba, 2006, p. 87); they desire impressions which are the most extraordinary and stir emotions. Their expectations are geared towards additional values (emotions, events, adventures, surprises). What is more, they show strong striving for uniqueness and exclusivity of offers (Steineke, 1999, p. 4). Urban tourism offer makes meeting clients expectations easier.

Cities have been attracting tourists for ages offering them accommodation, catering, entertainment and other attractions. They keep offering the same becoming somewhat substitutional towards each other. They "fight" for survival on the market with their products and resources. According to G.J. Ashworth tourism is a phenomenon related to the city more often than to any other areas and depends more on anthropogenic resources than natural resources. As a result footprint of the consequences of tourist movement is more visible in the cities than in the country (Ashworth, 1989, pp. 33-54).

In accordance with the statement of G.J. Ashworth (1992, p. 114) that cities which are of tourist interest and which are considered to be "resources of world heritage promoted as a whole yet sold in pieces", certain segmentation may be done on urban tourism (understood, to quote e.g. M. Voultsaki as "tourist activity in urban area which has proper infrastructure for tourism and historical and cultural components which are the attraction for tourists and foster, in an organized and systematic way, product and services production" (Pawlicz, 2008, p. 22)), which includes various types of tourism (Fig. 1). Amongst them one can find i.a. cultural tourism and religious tourism within.

Figure 1. Selected forms of contemporary urban tourism
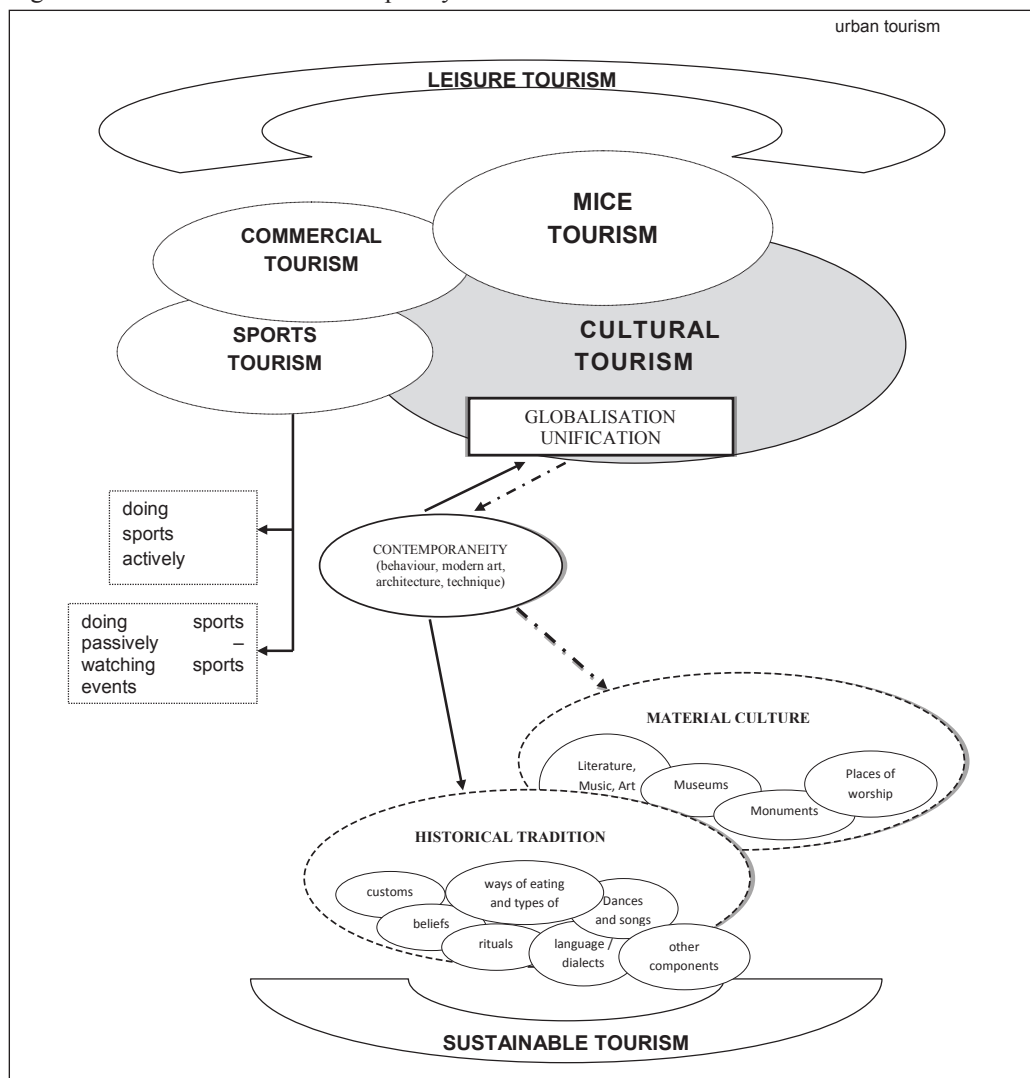
Source: (Niemczyk, 2010, pp. 482-498).

Subject literature knows various definitions of cultural tourism. One of them is the stance of G. Richards (2001, p. 7), expert in the issues in question, that defines cultural tourism as "tourism referring to both past culture and modern culture creations and the ways of living of different groups of people or regions including heritage tourism and modern art/culture-oriented tourism". As a result cultural tourism links content relating to both cultural heritage and modern culture (see Fig. 1); therefore it is a complex tourism product.
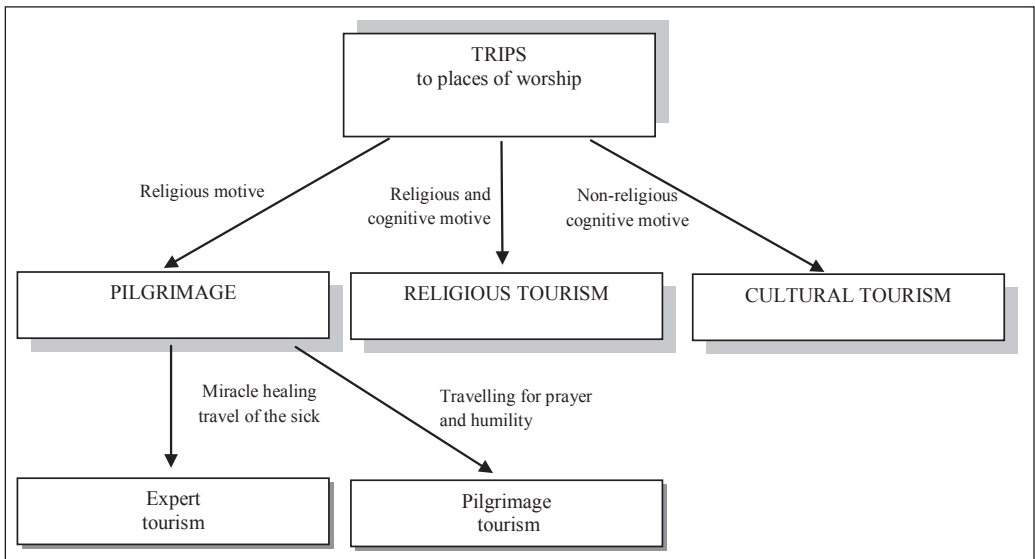
3. Religious tourism

As was mentioned before, cultural tourism allows meeting the needs of many tourists including the participants of religious travel. In the subject literature one can find multiple terminology concepts for religious tourism and closely related pilgrimage tourism. Whereas these terms are treated by some as independent terms (Jackowski, 1991, p. 7), the other join them in one category of religious-pilgrimage tourism.

A. Mikos von Rohrscheidt (2008, p. 147) is one of the supporters of such attitude and thinks of religious and pilgrimage tourism as "(…) travelling for religious or cognitive reasons, whose main goal is to visit places connected with the history of religion, places of worship, religious events and sacral objects". Joining pilgrimages and religious travel is also proposed by G. Richards justifying his stance by liquid borders between cultural and very religious dimension of these trips (Mikos von Rohrscheidt, 2008, p. 147). Also the sociology of tourism states the following: "Participation of tourists in religious events, religious and cognitive purposes of travelling and pilgrimages together create concise and logic entirety named religious-pilgrimage tourism" (Suprewicz, 2005, p. 157).

Experience shows that in numerous cases one trip may be undertaken for more than one motive (poly-motivational trip). Therefore, the motive for participation in religious tourism (see Fig. 2), and in general meaning of this term – cultural tourism, beside pilgrimages to sanctuaries are non-religious motives (e.g. the will to get familiar with other culture, its traditions and customs, and sacral value of instances of architecture) (Niemczyk & Seweryn, 2010, p. 358).

Figure 2. An outline of the trips to places of worship

Source: (Michałowski, 2003, p. 181).

4. Methodology

In the light of presented considerations the following research question was raised: *What makes religious tourists different from other tourists visiting the city?* four research hypotheses were specified parallelly on the basis of subject literature:

H_A Visitors of religious motives are characterized by shorter stay in the city as compared to other visitors (Bilska-Wodecka & Sołjan, 2015, p. 564).

H_B Travel agencies have bigger share in organizing tours for the participants of religious tourism than other form of tourist movement (GUS, 2014, p. 66).

H_C Alternative hotel facilities are more popular amongst religious tourists than other visitors (GUS, 2014, p. 128, 204).

H_D Participants of tours filled with religion visit tourist attractions around (Vukonic, 1996, p. 72; Niemczyk & Seweryn, 2010, p. 358). However it happens less often than amongst other tourists.

These hypotheses were verified on the basis of the results of research conducted in Krakow in 2016 on the City Council order under the supervision of the Lesser Poland's Organisation for Tourism. The questionnaire was filled in by 3501 participants of tourist movement in the city (Borkowski et al., 2017). However for the purpose of this analysis responses of 3302 were used. Statistically significant differences in tourist behaviour of the religious visitors to Krakow (experimental group S_1=234 individuals) and other visitors (control group S_2=3068 individuals) were identified by means of χ^2 Pearson test (in terms of Y_j variables expressed in nominal scale[2]) and U Mann-Whitney test (in terms of Y_j variables in ordinal scale). On that occasion two statistical hypotheses were stated 28 times: H_0 – behaviour of the participants of religious tourism (S_1) are the same as other visitors to Krakow (S_2) and H_1 – as alternative hypothesis. Provided that the probability value p had been less than α=0.05, H_1 should have been adopted. Otherwise there were no grounds to reject H_0. Obtained results are presented in Table 1.

Table 1. The results of significance test on differences between the behaviour of religious tourists in Krakow (S_1) and other visitors to the city in 2016 (S_2)

Variables (Y_i)	Test	p^*
Press as the source of information about Krakow (Y_1)		p=0.79356
Radio as the source of information about Krakow (Y_2)		p=0.63239
Television as the source of information about Krakow (Y_3)		***p*=0.01844**
Internet as the source of information about Krakow (Y_4)		p=0.27308
Social media as the source of information about Krakow (Y_5)		p=0.06828
Guide books as the source of information about Krakow (Y_6)	χ^2 with Yates' correction	p=0.92319
Travel agencies catalogues as the source of information about Krakow (Y_7)		p=0.85062
Brochures and leaflets as the source of information about Krakow (Y_8)		p=0.73237
Film as the source of information about Krakow (Y_9)		p=0.82978
School as the source of information about Krakow (Y_{10})		p=0.97175

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[2] In case of Y_1–Y_{19} variables, due to the symetry of tables (2x2), χ^2 was calculated on the basis of the formula with so called Yates' correction.

Family as the source of information about Krakow (Y_{11})	χ^2 with Yates' correction	*p*=0.39474
Friends as the source of information about Krakow (Y_{12})		**p=0.00483**
Other source of information about Krakow (Y_{13})		**p=0.02585**
Using tour guide services in Krakow (Y_{14})		**p=0.00069**
Using tour leader services in Krakow (Y_{15})		**p=0.02575**
Using tourist information in Krakow (Y_{16})		*p*=0.98998
Visiting Sukiennice [*Cloth Hall*] (Y_{17})		**p=0.01632**
Visiting Main Square Underground in Krakow (Y_{18})		**p=0.00002**
Visiting Salt Mine in Wieliczka (Y_{19})		**p=0.00070**
Operator of tours to Krakow (Y_{20})	χ^2	**p=0.00000**
Company during the trip to Krakow (Y_{21})		**p=0.00000**
Means of transport used while travelling to Krakow (Y_{22})		**p=0.00000**
Place of accommodation in Krakow (Y_{23})		**p=0.00000**
Length of stay in Krakow (Y_{24})	*U* Mann-Whitney	**p=0.04935**
Amount of expenses in Krakow (Y_{25})		*p*=0.35070
Frequency of visits to Krakow (Y_{26})		*p*=0.05446
Intention to visit Krakow again (Y_{27})		**p=0.02124**
Intention to recommend Krakow to other visitors (Y_{28})		*p*=0.38983

* Statistically significant differences were marked in bold.

Source: own work.

They allow the statement that the participants of religious form of tourist movement differ from other visitors to Krakow in terms of 14 out of 28 analyzed variables Y_j, i.e. in terms of the following features: using television (Y_3), friends' opinions (Y_{12}) and so called other sources of information about the city (Y_{13}), service of tour guides (Y_{14}) and tour leaders (Y_{15}), visiting local tourist attractions (Sukiennice Y_{17}, Main Square Underground Y_{18} and Salt Mine in Wieliczka Y_{19}), tour operator (Y_{20}) and the company during the trip to Krakow (Y_{21}), means of transport used (Y_{22}) and place of accommodation (Y_{23}), length of stay (Y_{24}) and the intention to visit the city again (Y_{27}).

5. Discriminants of tourist behaviour of the visitors to Krakow for religious purposes

What makes the participants of religious forms of tourist movement stand out of the entirety of visitors is the source of certain information about the city (Fig. 3). Namely, the visitors who come as pilgrims more often (nearly 1.5 times) heard about the old capital of Poland on TV and indicate so called other sources (such as books, history, previous visits, origin, studies, work, and the like). On the other hand, other visitors trust more the opinion of their friends (by almost 36%).

Figure 3. Sources of information about Krakow used by the participants of religious tourism and other visitors to the city in 2016
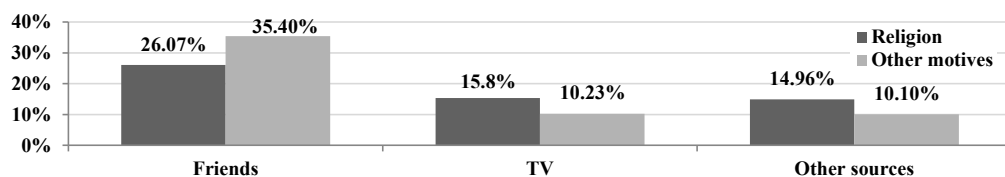
Source: own work.

Moreover, the company during the trip significantly differentiates religious visitors from other visitors to Krakow. Much larger percentage of the first than the latter come to Krakow with an organized group (nearly 3.5 times), and with family and friends (over 35% more) – see Figure 4. On the other hand non-religious tourists more often come to the city either alone or with family and friends (respectively over 1/2, over 2/5 and over 1/4 of indications more).

Figure 4. The company during the trip to Krakow for the participants of religious tourism and other visitors to the city in 2016
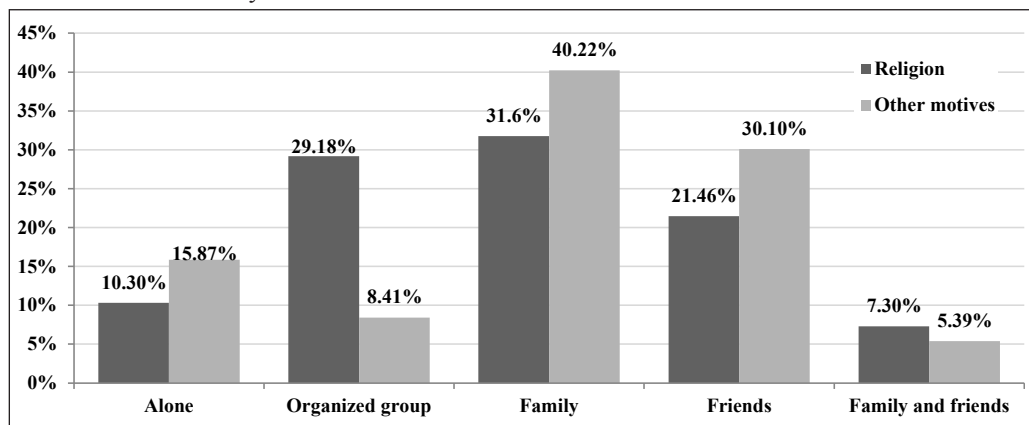
Source: own work.

The analysis of differences in terms of the operator of tours to Krakow for visitors of religious and other motives of the visit allows stating that the first type of tours are significantly more frequently (74 times) organized by parish/church (Fig. 5), which seems obvious. Moreover, more participants (1/3) of religious tourism use the service of travel agencies which empirically acknowledges H_B hypothesis. On the other hand, other visitors prefer trips organized by friends (almost 3 times more), workplace (by over ½) and family (by nearly ¼) and on their own (nearly 1/3 indications more).

Figure 5. Operator of tours to Krakow for the participants of religious tourism and other visitors to the city in 2016

Source: own work.

Due to the fact that a large population of visitors to Krakow with religious purpose (nearly 30%) come to the city with organized group, preferred means of transport is a coach – they travel this way nearly 3.5 times more than participants of other forms of tourist movement – see Figure 6. Mini bus is also of more interest amongst them (nearly ¼ more) and so called other means of transport (over 15% indications more), as well as the bus, yet slightly (nearly 1% more). Other visitors more frequently use the plane (total of 36.94% vs. 27.77%) and train (over 15% more).

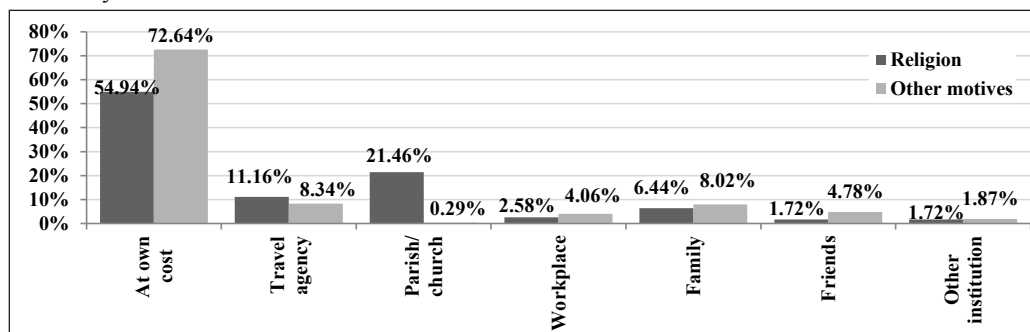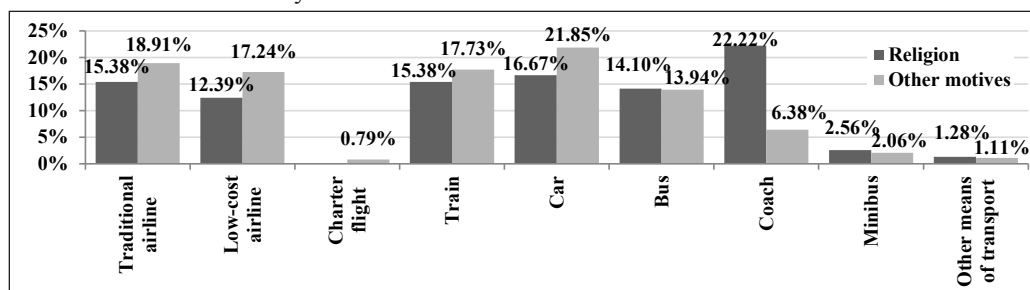Figure 6. Means of transport on a trip to Krakow used by the participants of religious tourism and other visitors to the city in 2016

Source: own work.

For the participants of religious tourism in Krakow one-day stays are the most characteristic (no overnight stay – over 1/3 indications more than amongst other visitors), weekend (two nights – over 15% more) and two or three weeks (total of 23.04% vs. 6.01%) – see Figure 7. When it comes to short visits (up to 3h), visits with one overnight stay and for the period of four days to one week, they are mostly declared by other visitors (respectively – over 3 times more, over 15% more and in total nearly 50% indications more). Thus, hypotheses H_A, which says that visitors of religious motives prefer shorter stays in the destination than other visitors is not positively verified.

Figure 7. Length of stay in Krakow of the participants of religious tourism and other visitors to the city in 2016

Source: own work.

Considering the place of accommodation it should be noticed that religious visitors mostly stay in hotels in Krakow. Nonetheless, such facilities are also of preference in case of participants of other forms of tourism (by nearly 15%), as well as in hostels (by nearly 80%), with family (by over 50%) and in apartments/private accommodation (by over 4%) – see Figure 8.
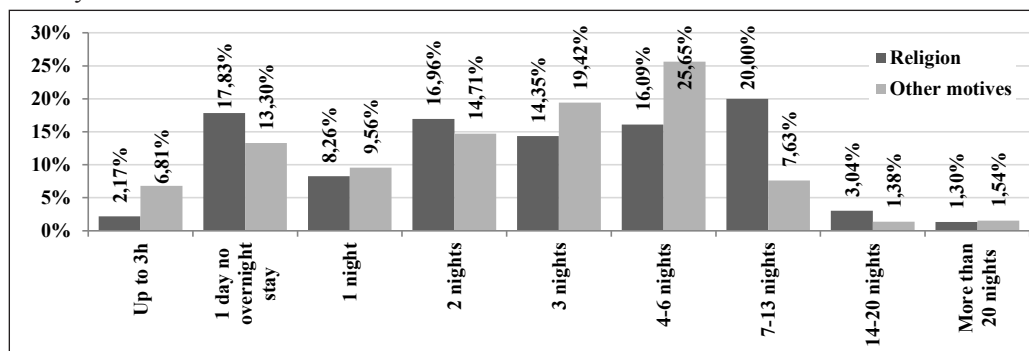
Figure 8. Place of accommodation in Krakow chose by the participants of religious tourism and other visitors to the city in 2016
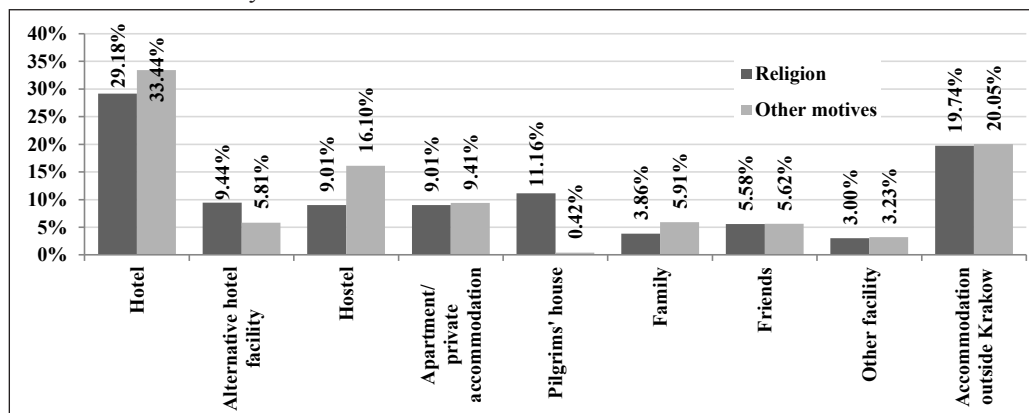
Source: own work.

Obviously, visitors who come as pilgrims prevail in pilgrims' houses (nearly 27 times more) and alternative hotel facilities (by over 60%). This positively verifies H_C hypothesis. It is worth adding that in the group of alternative hotel facilities particular attention is attracted by holiday centres, which do not only have the biggest share, but also are more popular amongst religious tourists than other visitors (31.82% *vs.* 21.91%).

Interesting conclusion can be drawn from the results referring to visiting local attractions. Contrary to expectations (H_D hypothesis is not empirically acknowledged), larger percentage

of the participants of religious tourism than visitors with other motives declares to have seen both Sukiennice and Main Square Underground Museum and even the Salt Mine in Wieliczka (respectively over 1/10, over 40% and nearly 30% more indications) – see Figure 9. This is probably owing to the fact that, as mentioned before, these people come with a group organized by either parish/church or travel agency and the itinerary includes visiting main attractions of the city.

Figure 9. Visiting local attractions by the participants of religious tourism and other visitors to the city in 2016
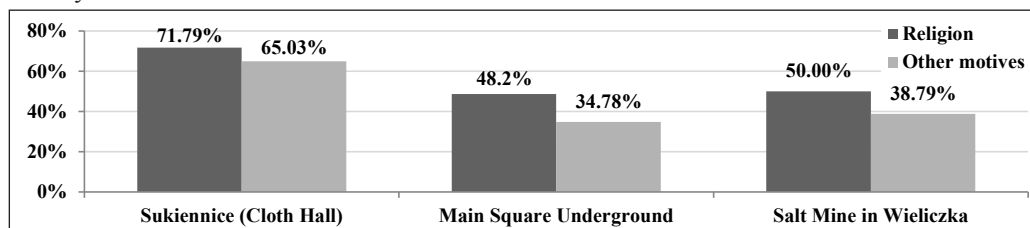
Source: own work.

Somewhat a continuation to the previous conclusions in terms of the company during the trip, tour operator, means of transport and visiting local attractions is the fact that religious visitors more often than other visitors while in Krakow use the services of tour guides and tour leaders (respectively by nearly ¼ and nearly ½) – see Figure 10.

Figure 10. Using tour guide and tour leader services by the participants of religious tourism and other visitors to the city in 2016
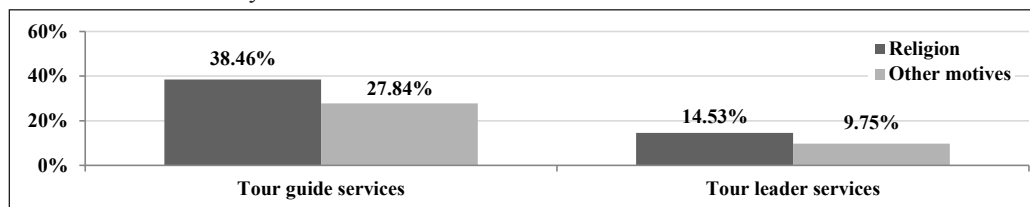
Source: own work.

And last but not least the intention to visit Krakow again. This is more frequently declared by the visitors of non-religious motives (total of 78.76% *vs.* 71.62%) – see Figure 11.

Figure 11. The intention of the participants of religious tourism and other visitors to the city in 2016 to visit Krakow again

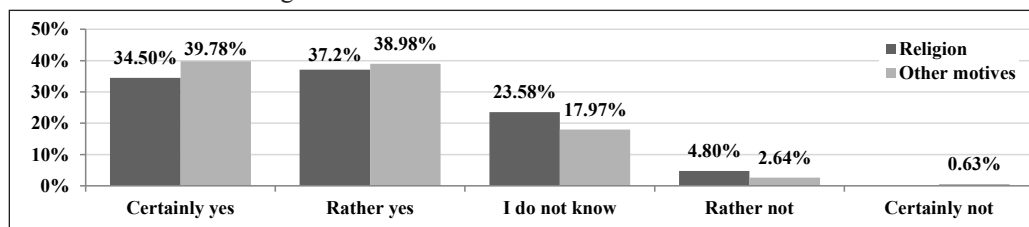Source: own work.

On the other hand, participants of tourism connected with faith are mostly not certain (over 30% more) and rather will not visit the city again (over 80% indications more). However none of the members of this group said certainly not (whereas in control group the result was 1%).

6. Conclusion

Firstly, religious tourism contrary to pilgrimage is a term relatively new in the subject literature, and secondly – it is of more general nature. Participants of this kind of tourism usually visit cities (GUS, 2014, p. 167, 203) in order to meet the needs connected with their faith and "visit" places of worship. According to conducted analyses in case of Krakow – typical example of urban tourist destination – they differ from other visitors because they: more frequently use television and so called other sources of information about the city, come by coach with a group organized either by church organization or travel agency for one day, weekend or one to two weeks, stay in pilgrims' houses and holiday centres, visit local attractions, use the services of tour guides and tour leaders and unfortunately do not plan to visit the capital of Lesser Poland again as often as other tourists. Local authorities and all entities dealing in tourism in the city should take actions to expose the wide spectrum of religious values (and other cultural values) preserved in Krakow in order to successfully encourage the visitors to come back.

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The Psycho-pedagogy Contexts Animation of Free Time in the Development of Tourism

Marian Bursztyn

1. Introduction

In the life of every man having certain interests and due using are essential once. They not always remember about it, however living incessantly is swimming ahead and if we won't hurry up perhaps it to turn out one day that he is already too late to a dream come true. Hey, you, whereas usually to carry out we can in our leisure time. He is understood as the time which stays after performing compulsory activities as the work, learning and other. This subject matter turned up above all at period of the creation of the industrial society, but it as a result of the standardization of the production. This problem didn't have a great significance in the traditional society, because it didn't influence for dividing the leisure time and the work. Also working outside the domicile is connected with it, of being in ranges of two communities. It is worthwhile pointing out that at the turn of years also a human activity changed. Very much quickly an intellectual activity grew particularly for the 19th century, a physical activity played the more and more low significance. Analysis of contexts of the animation of the leisure time is a purpose of this work in the development of tourism.

2. Using the leisure time

It is worthwhile pointing out that using the leisure time is individual for every man, it depends on many factors of faces: from the kind of work, sex, interests, preference, habits, age, available time, other duties and financial possibilities. Significant influence on the forming these habits are had the family and a peer group (Orłowska, 2001, p. 15).

According to S. E. Iso-Ahola human desires, aspirations a search and escapes are connected with a motive. First refers to getting internal satisfaction and recognizing. Second however is involving the minimization of the stress which is turning up at the everyday life, at fulfilling essential duties. A school can be a place of this type, work (Orłowska, 2001, p. 15).

To use the leisure time it is possible for entertainment, passive and active rest, developing own interests. Also various organisations and associations which realize the gravity of this issue are

dealing with organising the leisure time. Depending on the amount of the leisure time it is being divided on short, that is a few hours in a day, average, which public holidays, weekends, the time long, covering holidays, leave and holidays are accessing composition into. The leisure time serves the holiday, developmental and light function.

It results from examinations that Poles once are devoting not a lot participation in organizations of different type. They are most often these are however educational organizations (4.5%) and religious (3.6%), trade unions (3.2%) and rescue organizations (3%). the Little commitment refers to the work of commune self-governments (1.1%), regional and community (1%), in political (0.3%). However over the 70% of Poles he/she is taking an active part in no organization (CBOS, 1998, p. 7).

3. Leisure time at women and men

Certain differences in using the leisure time are appearing among women and men. It is also dependent from assigning appropriate of the sex and social-cultural roles. Women since childhood are being brought up totally different than men. It is they should be caring, helpful, to take care of house, family, children. However men should develop the own career, to earn and to support a family (Titków et al., 2004, p. 11). From the consideration women are being assigned of course for the performance of activities home, even in case of developing the professional career, they are holding the much smaller amount of time.

Men much more once are devoting the time off to the watching television and getting enough sleep. More rarely, whereas are listening to music, radios, whether are also leaving to the pub or are practising sport. Women more often devote the leisure time to homeworks, reading books, doing crosswords, visiting acquaintances, as well as inviting them to oneself. Much more they are devoting themselves to also a family life. Sometimes he is realizing that in the different degree they are reading newspapers, weeklies, they perform outstanding works, are dealing with the garden and the plot. Many women are also admitting, that if had a lot of the leisure time willingly would devote it for taking care of oneself, men for however developing the hobby and own abilities. As a result of the paucity of the leisure time desire for shining a light more and more often appears of it for getting enough sleep, settling current but necessary matters, as well as for meeting with friends and spending a lot of time with the family (OBOP, 2000, p. 10).

4. The leisure time but the hazards of with civilization

Living of the man in so-called world created by him "civilized", is bringing many threats behind himself very much. All technical achievements, including the ones cultural, simplified a lot of practical activities. They influenced the quality of life of the man negatively, worsening the condition of his health well worse causing diseases associated with the progress of civilization. They are main causes of such a state:
- development of new technologies which limited a natural physical effort, what can lead, at worst, to the development of pathological changes in the cardiovascular systems and of the locomotion,

- growth of industry and poisoning following him the natural environment, as a result of it poisoning the food can be, which it negatively affects the metabolism and possibilities of the biological regeneration of the man (Werner-Toczek, 1999, pp. 6-12),
- change of our lifestyle on "sitting, overfed and stimulated" (Kozdroń, 1997, pp. 24-26).

According to many authors, so like among others S. Werner-Toczek, D. Nałęcka, E. Kozdroń, for our organism a lack of the move and a lack of the regular motor activity are greatest contemporary danger, which the general state of our organism permanently is worsening it without oneself. Illnesses, being an effect of the lack of the movement in current world, are the enormous problem. They are bringing the threat to the human body, these are illnesses: of the cardiovascular system, atherosclerosis, diabetes and the obesity. These illnesses are a plague of today's times, with which one should not only fight, but above all prevent them.

At present so that are healthy and happy and avoid the contemporary civilization from dangerous effects, one should put the special pressure on the motor activity which is acting as preventive measures and preventive. The tourism and the recreation are essential to living, and appropriately the directed motor activity can to a large extent prevent diseases associated with the progress of civilization. Therefore, the involvement in the motor recreation should be a need for the contemporary man, because generally known maxim "better to prevent than to cure" is still standing still. The motor activity should be recommended and promoted through the entire life, since childhood for next periods, all the way to the old age.

5. The animation of the leisure time as the tourist and cultural solution

A social-cultural animated film is one of types of the cultural practice. Cultural, of civilization changes influence it and above local circumstances. A certain ambiguity is characterizing them. From one side she is treated as the idea of the directional practice, on the other however as methods which enable to implement this idea into given reality. They are it is action of different kind which an activity of people and their aspiration to gaining the group and individual autonomy are supposed to prompt.

Date the animation derives from the Latin from *anima*, meaning the soul and *animato*, meaning the excitement, additionally the animus refers to the vigour, in the form is also denoting the verb: to give the soul, to breathe new life into something, to stimulate, to give the courage (Nobis, 2006, p. 2). In the Polish language refers to the animation of objects, activities, including encouraging them to certain actions. According to A. Nobis "with common characteristic of meanings of the word animation – in spite of noticeable differences – limiting animating only to animating is" (Nobis, 2006, p. 5). This calling to the biblical description the man, consisting of two stages is: of forming and prompting to live. It is worthwhile noticing that they are these are two different activities. Animating it is possible, and so to think for stimulating living into somebody who is already "formed", that is already has certain, prescribed limits. Words are portraying the influence of the animation: "the animation which constitutes the support for smaller groups and little community and diversified classes, is becoming a middle of stimulating the active participation of individuals in the social life. Plays the role of a strong antidote to this pathology of social life that results from breaking communication with other people, with isolation of the unit, loss of tra-

ditional reference standards and any social guarantees, the existential human security" (Debesse & Mialaret, 1988, p. 23)

The animation turned up at first in France in years 60 of the 20th century. She assumed the form of the social activity of different kind, of which gaining the autonomy through the participation in the cultural life was a purpose and social. She motivated for exploiting the potential, constituted the stimulus for the life emotional, intellectual, physical, inducing fixtures for taking action, assisting self-development, expression, search later to be received by a society, to which it is possible.

In Poland the social-cultural animated film turned up at years 90 of the 20th century which preceded, economic, cultural and social political changes by. "Until the animation was a style of living in cities and on villages, was unknown, was very tissue of the social life. Only in the moment, when disappeared they started talking about her, to allow for her existing to the awareness. Hence the paradox, the animation is, beginning from the moment, which is already an animation missing. It is a myth of Orfeusz and rebour: it because the Eurydice no longer exists, Orfeusz is feeling the need to look at it" (Kopczyńska, 1993, p. 39).

The animation is used for leading of changes into the personal and social life the man. Assisting coming into existence of the new person, as well as community are one of important aims of the animation. P. Moulinier is paying attention, that it isn't necessary to mix comprehending the animation up with her purpose, because reliable concepts societies with centres, the practice and manners of the implementation of operations are very diverse (Kopczyńska, 1993, pp. 40-44).

It is possible to understand cells of the animation as (Gajda & Zardecki, 2001, p. 178):

- activation of the involvement in the culture,
- reviving the cultural democracy,
- activation of the culture of small communities, circles, individuals and groups,
- influencing to the better quality of life of members of society, through the involvement in stimulating by animators.

The social-cultural animated film is using the concept of living of the man in the given culture, involved in forming oneself and community in which he is.

A man, being in a given culture is being regarded as the entity of the animation. However action, focused on the realization of aesthetic values is a subject of the animated film and coming from axiomatic spaces. She is aspiring for creating the cultural democracy, where individuals and communities differ in the culture, but isn't causing it discord at carrying the value out. He assumes that the culture constitutes the feature of the human species, his attribute. He is responsible for patterns, regularities, norms. The animation is fulfilling the following functions: adaptive, information, communications, integration, facilitating the agreement, the adaptation and the active participation in the social life (Trempała, 1994, p. 12).

Amongst the value of the animation a freedom of the individual and a self-determination are standing out, authenticity, autonomies of the subject, pluralism of cultures, creativity, participation, worry about oneself, solidarity, autonomy.

Animation practice are different very much, it is looking alike with centres and modi operandi. With difficulty he is, and so to demonstrate only one termination. So that effects of the animated film are effective must influence for the process of discovering oneself, organising the human intercourse and the creation.

The animation of the person through values is appealing to the education and influencing character (Kwaśnica, 1987, p. 34).

He has the task of influencing the activity of the individual, artistic work of the potential. Also needs and desires are being aroused, is sensitizing to values and is handing the knowledge over, is helping with the achievement of the goals. The animator is accomplishing setting the class tutor, of which the influence depends from the built relation with participants. She is necessary, so ability of the mature transport, of undergoing the dialogue. It is person prompting faith and passion. Until recently the animated film included only an after school activity in the form of clubs and glimmer, more and more often starts turning up also in the school environment.

The animation of the community to social and cultural bonds is appealing to the local communities, understood as certain community which they are characterizing (Kaczmarek, 2001, p. 237): territory, long-lasting bond between members, social interactions. Activating the local communities is aimed. He serves realizing cultural traditions, is enlivening the social, political, artistic sphere, or economic. He influences development of the district, housing estates, villages in the process. It is also stimulating the creative potential which is in communities, groups circles. The method of projects consists of the stage of diagnosing the environment, building the social communication, drawing up of projects of action and the realization them.

The animator of the community influences the development of new undertakings, is assisting mechanisms of the civil democracy (Gliński et al., 2002, p. 31). He is organising the partner cooperation, agreement between entities of the cultural life. The animator is answering for building the relation in the group, doesn't walk here for propagating everlasting values, and for teaching the man in what way independently can find them and use them. He lets find virtues in the culture, influencing the development of individuals and communities in the process. Animators are helping knowledge, getting to know the cultural legacy, the history of region, tradition, national culture widen. Thanks to that a bond with the homeland is being created, a regional identity is developing and for the man his membership in given groups is appearing, places. However it influences activations of action in the given region, sense is making up a nation's identity (Angiel, 2001, p. 10).

Abilities of the animator are essential at the forming of the appropriate attitude and action. A knowledge of the pedagogy of the culture is necessary, of regional education, ability of using this knowledge to communicative, cultural, creative purposes (Kobyliński, 1984, p. 138). The lack of the adequate knowledge can discourage cultures for getting to know the legacy, involvements in local action. It is, so certain barrier which it is necessary to cross. Additionally problems appear in formed already postures of people, their reluctance to act, bad experiences and the distrust for other people. Assisting them in creating cultural goods is a method of integrating young people, stimulating their innovative thinking.

Nowadays which the great indifference is characterizing, particularly on the part of young people, the social-cultural animated film is a great chance of positive influencing the local communities and the group. Thanks to the cooperation, as well as the forming of the own knowledge and the personality integrating groups is possible, of individuals and concentration on achieving the common goals, favourable to the region and the country.

Preparing the man for the involvement in the active leisure is a significant function of the recreation, in order to everyone through entire was a participation overcome his life in some any for her form. Forms and types of the recreation have very important meaning in education activity. Programming for her for chosen circles socio-professional and of age groups. Education activity connected with the motor recreation according to W. Wolańska is depending on "of character of involvement in the recreation, specificity of programme basic aims, environment and terrain conditions, where the motor recreation is proceeding, of likings of participants, their demographic,

cultural features and environmental conditions" (Wolańska, 1988, pp. 32-35). Usually to forms of the motor, conditioned recreation with participation, it is possible to rank individual forms of the motor recreation, team forms of the recreation and forms of the motor recreation in the family circle. Amongst forms of the recreation, conditioned with specificity of basic aims of the programming, training permanent and temporary, mass teams are being ranked sports-recreational parties, so as the competition, trips and championships.

With forms of the motor recreation which is conditioning the environment and the area of for her applying these are forms of the motor recreation in the workplace, at a company leisure centre, housing estates and the centre of everyday rest. A play and recreational games are the last group of forms of the motor recreation which is conditioning likings of participants, their demographic features and environmental conditions, however in sports character these are bodybuilding, self-defence of the gymnast, recreational games, light athletics, water sports, winter sports, team games (Siwiński & Tauber, 2004, pp. 35-37).

About tourist character among others trips are forms of the recreation, march for orientations or field quiz games. Forms are a next form of the motor recreation about the preventive-medicinal capacity, so as attempts of the physical fitness which fitness trails, joining elements of exchanged earlier forms are and tests. For the motor recreation bringing up to her is a form. Numerous institutions and organizations dealing with it are a school which earliest is preparing for the motor recreation, arousing interests of its foster children. Also sports clubs, day rooms, Jordan gardens and youth clubs are meeting the substantial recreational need of children and teenagers. One of main forms of rest a need of the recreation is which, is being implemented by the family.

Recreational-sports bases and institutions of the education are a base for the recreational execution of tasks. Therefore institutions and organizations of the physical culture which forms of different kind of the active leisure are organising have the greatest possibility of the upbringing. A responsible task lies also with instructors of the motor recreation, because they are supposed appropriately to take and to encourage participation in classes it. Attending in these organised forms of the recreation psychophysical relaxation is being attained, and taking the frequent participation in them the man is learning models of the active leisure. Apart from fulfilling one's basic functions, recreational-sports institutions are educating participants under the angle of the influence of individual exercises and health trainings on the human body. All at the same time they are mobilizing and are encouraging participation in next motor classes. Establishing the education program at individual recreational-sports institutions, one should remember to take into account needs and interests of recipients. That is type of the performed work, as the degree all at the same time connected with it of the tiredness. The program must provide unabridged psychophysical rest for its participants and have contents which social postures are shaping. The achievement of the programme about education character requires above all suitable for put tasks of leisure facilities, so as for instance courts, sports stadiums, squares for recreational games, swimming pools, fitness trails, small gardens of childlike games and stadiums (Siwiński & Tauber, 2004, pp. 8-12).

According to B. Suchodolski and J. Wojnara (1972, pp. 6-11) people must competently manage one's leisure time. The value is measuring it up oneself with contents, with which every man can grant him in the individualized way. The leisure time is fulfilling exclusively a positive role, when appropriately is organised, his contents filled up with valuable contents, i.e. the participation in forms of different kind of the motor recreation. To remember he belongs, that abilities and the interest aren't coming alone, but it is necessary to learn them for the youngest years.

Many researches are confirming that the modern society is characterizing consumer character of behaviours in the free time. A model of the passive recipient is becoming established through the advertising industry which is fulfilling the negative role. It is necessary firmly to oppose such managing spending the leisure time. Notion it is possible to understand "bringing up for the recreation" as constant preparing the individual for active, independent and rational filling up the leisure time, to provide entertainment, and cultural-sports rest for diversified recreational activity accepted by the society which has the task. Everything is aimed at it developing the own personality.

Z. Dąbrowski (1966, p. 12) aptly realized that it wasn't possible to learn rational using the leisure time the same as operations of the machine or the car. Bringing up for the motor recreation is merging with a determined lifestyle of the man and with his personality whole structure. It is necessary to ensure conditions for the broad development of the man, remembering him to learn creatively to spend his free time. Arousing our interests and recreational-motor abilities conditions very much supporting even on the assumption that our budget isn't large are arising, a time for the participation in recreational-sports specific forms will always be. We are coming back to it, since we like it. According to researchers of the physical culture individual needs of the motor recreation aren't still strengthened in the scale of the society as a whole. It is possible to notice it through the fact that more and more harmful and primitive forms of for her spending e.g. in front of the TV screen, or the computer are being watched. It is a conclusion, that one should competently vaccinate new forms and models, proposing the man and the society these kinds of the motor activity which are giving the benefit. It is necessary to shape needs of the active leisure which are developing the psyche and the physicality of the man. All these processes should start very early similarly to the process of bringing up, while our interests, the search of models of proceedings and educations of different habits are waking up types of the recreation. One should implement them competently and gradually propose, and then still strengthen.

According to T. Wolańska "constant upbringing, isn't ending upon leaving the school". The upbringing which we will start the school or the house constitutes only an initial point for his further continuing. Every stage of our life needs the proper preparation in the motor recreation. Therefore every program which he is bringing up for the motor recreation should have various stages which will take the diversity into account environment of the life of every man. With main recommendations of teachers, from the field of the pedagogy of the physical culture, everyone such a program should:

- An education of the family is the first point, since children should from the house amount to their accustoming to active and different kinds the motor recreation; at home should reach for making aware of the useful leisure time. However in families these positive templates for spending the leisure time are often missing.
- An influence on the modern environmental school is the second point, which preparing the young man is a main task, for both for the work, and for active spending the leisure time. Here a close relationship is appearing between waking at school with needs of the move, and on the background with kinds and forms of the move applied in the period for adults, that is in the career of the man.
- Inspiring institutions of the after school upbringing is the third point; are these are among others organizations of the physical culture, workplaces, recreational-sports centres, housing estates to making effort in the direction of organising new, more attractive forms and types of spending the leisure time. All these institutions in the process will be fulfilling the important function of bringing up for the motor recreation through the movement (Wolańska, 1989, pp. 4-6).

The motor recreation is an essential element of the common health care of the psychological and physical man. The participation of the man in passive recreational forms isn't affecting adversely to the medical condition, however a too little move, or his paucity constitute it stays without no influence on the medical condition of the man. S. Kozłowski (1964, pp. 32-33) is putting the statement forward, that forms of the move and recreational exercises in the life of the contemporary man should not be luxury in no step, but they are as with practical need, and very motor recreation should be raised in education activity to the rank of the essential needs which the diet, the learning or the work are. Twenty-four hour balance energy he should be diversified and is a matter of the personal hygiene of every man and in the deciding rank he influences the medical condition, therefore a programming of the upbringing is so important for the motor recreation.

The whole process of bringing up for the motor recreation consists not only in in order to put the person training in the situation which enables to display behaviours which are embraced by him with operational objectives, but also on stimulating him in different situations to choose from of these behaviours. They always make it by using the system of satisfaction and dissatisfactions. While these operations have character of programme-intentional proceedings, they are talking here about methods of the upbringing to the motor recreation. The fact that she enables the person training selecting between keeping about recreational character in the different value is the most substantial education situation. What behind it is going, for them the level on which the exercising person is, is lower, there will be reduced options of the kind and forms of the motor recreation all the more. The selection of methods will depend not only from the destination of bringing up for the motor recreation, but also from the situation, in which the education influence is occurring.

J. Reykowski (1966, pp. 42-44) thinks that using the given method of bringing up for the motor recreation consists in in order to trigger at exercising certain the suspense or threats. This state is determined with name – of psychological stress. It is taking place through entering certain factors into the situation in which he is called stress factors. They are disrupting the process of the current self-regulation, and hence are forcing the individual to taking of proper activities, all the way to the time of the address desired changes.

Stressful situations belong to the situation difficult. They arise and include these factors, which are formed as a result of changes in external conditions the activity of people exercising, but also as a result of the changes that are taking place in the sphere of its aspirations. This has to be regarded as indispensable in the process of the entire upbringing for recreation. The total development of personality is made, if the person cannot achieve its objectives with the help of existing repertoire of behaviors, or because the objectives have changed or behavior are no longer effective. Methods of bringing up for the recreation consist on proper operating and on intentional granting situations in which the exercising person is properties of the stressing or difficult situation. It is happening for in order to induce the exercising person for solving the difficult situation through the new, more advanced form of the recreational activity. It is possible to reach it, both through implementing new obstacles and stimuli for organised recreational forms, but also requirements. Through outside manipulations and through triggering new aims and aspiration, that is through manipulations about the internal capacity. It is possible to specify three more and more the highest levels of such action (Siwiński & Tauber, 2004, pp. 32-35):

- It is possible to determine the first level as taking behavior norms and proceedings from other people. He relies on the fact that the instructor alone is making all alterations in education situations for the motor recreation, in which exercising is unaware in her participation. The in-

structor is implementing impediments of different kind in tasks, which exercising is picking up as coming from the outside. It is a state between anomy and with autonomy.

- Next, with the highest level of the participation training in the accomplishment of the process of bringing up in the motor recreation there is a partner variant. With being of him the fact that he relies on the agreement and the cooperation is between exercising, and with instructor within implementing new situations of complication and submitting requirements. It is this way then, when exercising mind as well as he is approving cells, which it not only a person conducting exercises, but also an exercising person are trying to reach, therefore voluntarily and consciously an instructor is being subjected to recommendations.

- Third, and all at the same time in the completion of the education process for the motor recreation his autonomous form is the highest level. She is taking place then when the exercising person is not only accepting methods and education cells, but also wants and can alone enter such requirements and impediments into his practical situations, of which the realization allows for achieving personal education purposes. This level is attainable then when determined requirements are concerning the given personality and one's. Achieving standards in this regard should be a purpose then for the man in itself, rather than for ones of centres leading into other purposes. Instructor the driver then is perceived as the person, which managing the development perhaps for him to help.

The mentioned above level of the exercising participation in the process of bringing up is a ground for self-raising. For her it is a main characteristic trademark, that exercising purchased the attitude which is making him able to satisfy and displeasures at their progress. In order to reach for forming this autonomous attitude towards the motor recreation the exercising person must at first go through the attitude from imitating to partner.

Using education methods consists in competent leading into individual situations of the respective elements what is very important from a point of view of developmental states of the exercising person. It refers to such states which they constitute for the person exercising certain values. Distant points of view, irrespective of it that were important in other assumptions, must walk away to the background. In the adequate situation only it is taking into account, what for the exercising person state of dissatisfaction, or pleasures can trigger, that is, is correlating with these motivations the exercising person is surviving which in the given moment or it is possible in them to free which. Without these elements a possibility of exerting of the education influence on acting the exercising person is excluding each other. He is leading it to the ineffectiveness of applied methods in bringing up for the recreation. Different circumstances can cause that methods ineffectively will be applied. For example the instructor can badly determine what he is triggering at exercising satisfaction or dissatisfaction. It is possible to determine such other factors as (Siwiński & Tauber, 2004, pp. 36-36):

- The instructor of the motor recreation, his valid arrangement of relationships between it, but the exercise and his action.
- Arrangement of the current appearance, from which it prospects of the possibility of fulfilling motives depend exercising.
- Exercising the social environment, but first of all the membership group or the reference group.
- The exercising person, her all motives, his rules of conduct of the belief and views.

6. Conclusion

Undoubtedly personal postures and interests and tastes of the given individual are one of indicators of spending the leisure time. Also a living conditions dependent on very man is important factors, particularly from the level of his development of the intellectual, emotional, refined taste and needs. The leisure time is reflecting all positive conditions which exist in such a society as recreational-sports bases, financial-technical and activity of state institutions of all kinds and different forms social, appointed in order to organize and types of the motor recreation.

Thanks to the social-cultural animated film young people can cross the crash barrier of the popular culture and gain satisfactions in action in the given region. They are acquiring a skill of distancing themselves from the mass culture, subculture groups (Jankowski, 2001, p. 189) and the forming of the personal autonomy. Thanks to that they are improving the own personality, are increasing experiences and experience, are learning the creative participation in the region and the own homeland. Additionally the animation allows to accomplish own purposes, to gain satisfaction from own operations, to create an appropriate hierarchy of values and the avocation to the country.

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Chapter **29**

Social Media as a Tool of Sharing Tourists Opinions about Accommodation Services in Krakow[1]

Jadwiga Berbeka, Krzysztof Borodako, Michał Rudnicki

1. Introduction

The contemporary tourist market is undergoing major transformations. This is due to a number of factors, among which technology and generational changes play a key role. Both groups of factors penetrate each other's strongly and exert a strong influence on the growing expectations of tourists as well as the development of various tourist services.

Considering the development of available and implemented technologies in tourism, it can be stated that their presence is very wide – from the management of facilities (accommodation, catering) to applications and systems dedicated for tourists to share in social media opinions, evaluations and impressions of purchased services or moments of experience. These technologies make the need for tourists to choose more and more information sources, while tourists themselves are eager to share information with others creating the required content for different systems.

The purpose of this paper is to examine if tourists in Krakow share theirs opinions and experiences after a visit in the city. Due to the generation changes the focus in this paper is on the young generation with purchasing power called generation Y. The special attention is paid to opinions about accommodation in Krakow. In the research was implemented the questionnaire method to collect data and statistical methods (cross tabulation analysis) to discover the differences between subgroup of the research sample.

2. Social media and others ICT in tourist behavior

In the age of information society, consumers change their behavior on the market under the influence of available technologies. This can be explained as searching the Internet, shopping

in the virtual world, taking shared actions in a virtual environment (often with impact on real life), posting likes or tweets, and installing and using hundreds of mobile applications (Lee et al., 2011).

Information and Communication Technologies (ICT) plays a crucial role in creating consumer autonomy (Buhalis & Jun, 2011), because they allow access to information, their collection, and their sharing, e.g. via social media (Fotis et al., 2011; Sigala, 2012; Xiang, 2011; Xiang & Gretzel, 2010). Moreover, ICTs have a huge impact on consumer shopping behavior, allowing quick and direct access to the opinions of other users. Numerous studies on the tourism market show that these technologies serve as mechanisms for increasing communication and interaction with and between stakeholders (Buhalis & O'Connor, 2006; Gratzer et al., 2002, in: Ali & Frew, 2014, p. 266). Research shows that consumers turn mobile desktops into mobile devices when they are searching for travel information and making payments for purchases (Gasdia & Hoffman, 2014; Google, 2014). Therefore, mobile devices are perceived as specific catalysts for modern tourist behavior (Gretzel, 2010). Moreover, it can be observed that nowadays there is a shift in the search for "trustworthy recommendations". Tourists, in case of the absence of relevant information, use several tools at the same time e.g. recommendation service or sites with advices other travelers in order to find a review (opinion) on the intended purchase/selection of tourist destinations. Taking into account their constant communication, tourists do not only continually update their travel experiences, but primarily seek information during the journey. They exchange experiences of attractions, but first of all, they inform each other about the quality of services provided by individual entities such as accommodation services. Numerous studies have confirmed that social media platforms contain a large amount of user generated content and are subsequently used widely by tourists (future and current) in the decision-making process (Lu & Stepchenkova, 2014). These factors make that the current model of consumption has risen to a new level of much more spontaneous behavior (Lamsfus et al., 2014). It is noticeable that consumers become integrally dependent on their mobile devices in experiencing tourist experiences (Lamsfus et al., 2014; Tussyadiah, 2016).

Within the broad category of social media it can be possible to distinguish thematic social networks, including some kind of networks related to the travel and tourism industry (Miguens et al., 2008). Social media such as TripAdvisor makes it possible to promote social interaction in tourism, thus encouraging users to share their experiences in different areas of tourism (Munar & Ooi, 2013). That's why tourists not only read and then use information available in social media, but also generate their own content in these portals.

The usage of social media in the tourism market can be divided into three distinct stages: the pre-departure stage (primarily for information seeking), the travel stage (mainly to find information and share experiences and opinions), and the post – to assess places, services or events, as well as design of further travel plans. The results of the research presented in this paper are focused on the last stage where the tourists share their experiences and opinions on the Internet (including social media). It should also be emphasized that such tourist portals, as previously mentioned TripAdvisor, belong to the group of opinions sharing portals as well as social networking sites.

3. Y generation – characteristics in relation to tourism

The behavior of tourists on the market are determined by various factors affecting individual tourist choices. One of the basic and most important determinants affecting tourist demand is the age of traveling people. Moreover, it is noted that the age of tourists determines tourist behavior: motives

of traveling, the transport and accommodation preferred, forms of spending time during the trip, and what is important from the point of view of the objectives of this research, ways of communication.

Analysis of different age groups leads to the identification of specific attitudes and behaviors relevant to the age group i.e. generation. Nowadays people representatives six generations: generation of GI (the Greatest Generation, the generation of the heroes born in 1901-1924), the Silent Generation (1925-1942), Baby Boomer Generation (1943-1960) and generations X (1961-1981), Y (1982-2002) and Z (2003-2017). Each generation is characterized by people in the same age, who based on a common historical and social circumstances and have similar attitudes, motivations, attitudes and value systems (Griese, 1996). In the case of generation Y (people of this age are also the most active tourists), is a time of rapid technological changes: a breakthrough in computerization and digitization, the creation of the Internet and the commercialization of numerous inventions and improvements. The great influence on generation Y has the information and communication technologies, the development of which contributed to the gap between generations higher than ever before in the history. The role of technology in the life of generation Y reflects the names given to this generation: WWW Generation, Net Generation, Thumb Generation or Game Boy Generation (Huntley, 2006). It is also called as digital native because they communicate with the new technologies since childhood and that the use of which does not make their discomfort (Reisenwitz & Iyer, 2009). What's more, they perceive the benefits of their use in every sphere of life. Technology is treated like the sixth sense, a tool to know the world and to remain with it in continuous interaction, a lot of evidence of such an approach they reveal while traveling.

4. Methodology and characteristics of respondents

4.1. Methodology

The aim of the article is an identification of the scale of tourists sharing their opinions about hotels in Krakow and an assessment of opinions about the hospitality sector in Krakow.

The empirical data are results of questionnaire survey conducted in Krakow in the period: June-September 2016. The sample size was N = 1175 persons, but the subsample of generation Y respondents was created with 595 items. In the research the questionnaire survey method was implemented due to its key attribute connected with collecting the data – the same procedure to collect all the data (Babbie, 2009).

There was conducted the analysis of the relation between the replies of questions (about the opinion sharing and usage of ICT by tourism companies) and the features of the respondents. Some statistically significant relations were discussed.

4.2. Characteristics of respondents

The first feature of the respondents included in the description of the respondents' group was the age. Because the scope of the research concerns Y generation, only two age groups were taken under consideration. The younger group (18-26 years) dominated with 59% share in comparison to the older group (age 27-35 years). Women represented 55% of the sample. Most of those who participated in the research live in mid-sized city (29.9%) and big city (27.9%). The next two features of respondents relate to their education and professional status. According to the research

results 51.1% respondents declared secondary level, but the higher education declared 47%. In case of professional status the biggest group was represented by students (38.8%) and the next groups were: white-collar workers (26.4%) and manual workers – 16.1% (Tab. 1).

Table 1. Sample description – social aspects

	Number	Percent		Number	Percent
Age, N=595			Education, N=595		
18-26 year olds	352	59.2	higher	280	47.0
27-35 year olds	243	40.8	secondary	304	51.1
Sex, N=595			other	7	1.2
woman	327	55.0	Lack of data	4	0.7
man	268	45.0	Professional status. N=595		
Place of living, N=595			pupil	29	4.9
village	145	24.4	student	231	38.8
small city	100	16.8	white collar worker	157	26.4
mid-sized city	178	29.9	manual worker	96	16.1
big city	166	27.9	entrepreneur	40	6.7
Lack of data	6	1.0	other	39	6.7
			Lack of data	3	0.4

Source: own work.

The second group of characteristics of respondents was the specific aspect connected with the frequency of the travel and technical aspects – usage of the mobile phone and used operating system.

Table 2. Sample description – other aspects

	Number	Percent		Number	Percent
How many times a year do you leave for a tourist or business trip, away from your place of residence? N=595			Do you use your mobile phone while traveling? N=595		
Often than four time in the year	188	31.6	Yes	574	96.5
Twice a year	142	23.9	No	18	3.0
Once a year	89	15.0	Lack of data	3	0.5
Three times a year	89	15.0	What operating system is installed on your phone?		
Selden than once a year	50	8.4	Android	337	56.6
None	31	5.2	IOS/Apple	171	28.7
Lack of data	5	0.8	Windows Phone	55	9.2
			BlackBerry	13	2.2
			Symbian	9	1.5
			I don't know	7	1.3
			Lack of data	3	0.5

Source: own work.

Almost one third (31.6%) of the sample travel (with touristic or business aim) more than four times a year. One quarter of the respondents declare travel twice a year. Regarding the usage of the mobile phone while traveling 96.5% declare such a usage. Over the half of the respondents use the smartphones with Android operating system, and almost one third (28.7%) with IOS/Apple system (Tab. 2).

5. Accommodation services in Krakow

Tourist accommodation is responsible for the development of tourism – on the one hand it provides rooms and other hotel services (among which the most important are sleeping services) and on the other it stimulates the development of tourism. Accommodation services are provided by various objects operating in Krakow such as hotels, motels, guest houses, hostels, apartments and much more. Due to the comparability of analyzes and for statistical purposes, these objects are classified into larger categories.

According to the latest statistics from 2015, the number of tourist facilities was 846 in total (Tab. 3). The most dynamically developing segment of venues are hotels. Their number at the end of 2015 was 133.

Table 3. Number of accommodation venues in Krakow in 2015

Type of object	Hotels and similar accommodation	Tourist accommodation and short-stay accommodation	Campsites	Other accommodation	In total	
Number of venues	464	318	3	61	846	
Hotel category	5*	4*	3*	2*	1*	In total
Number of hotels	10	29	72	14	8	133

Source: own work.

An analysis of the structure of the hotel base shows that it is dominated by 3-star hotels (Tab. 3). At the same time, there is a growing share of luxury hotels – four and five star hotels in recent years. This fact is justified by the popularity of individual objects among tourists. The largest percentage of both domestic and foreign tourists choose a hotel from other categories.

Table 4. The structure of guests coming to Krakow in 2016 by accommodation

Where are the tourists staying in Krakow	In total	Domestic	Foreigners
Hotel	32%	13%	44%
Motel	2%	2%	1%
Guesthouse	2%	3%	1%
Holiday resort	1%	1%	2%
Youth hostel	1%	1%	1%
Hostel	15%	11%	19%
Rooms, apartments	9%	8%	10%
Spa	0%	0%	0%
Pilgrim's house	2%	2%	3%
Others	4%	4%	4%

Source: (Borkowski (Ed.), 2016).

The quality of the services provided by hotels in Krakow has been constantly increasing. Users of Trip Advisor granted Travelers Choice 38 Krakow properties (38 out of 256 tourist accommodation establishments) in 2017. It is also worth mentioning that Krakow as a destination, was ranked 8th in the Travelers' Choice ™ ranking in the "Top destination on the rise" category organized by this site.

6. Millennials' opinions about accommodation services in Krakow shared in social media – results of survey

The first analyzed issue was sharing experiences from Krakow in social media by tourists after visiting the city. In the total surveyed population nearly 60% of respondents place their opinions in social services, Y generation does it more frequently: 69% of them share.

An interesting issue were determinants of tourists' activity in social services like Facebook or Twitter after the trip.

Survey findings reveal that one of the statistically significant factors is the gender (Chi^2 Pearson = 4,269924, p = ,03879). In the group of Millennials visiting Krakow 40% of women share their impressions and 29% men do. The second factor is the education (Chi^2 Pearson = 5,644277, p = ,05948). 38% of young people with secondary education put their opinion in social services, while only 31% with higher education.

Sharing memories from Krakow on their blogs or webpages declare only 15% of Y generation. Gender is a statistically significant factor, 10% of female put news on their blogs or webpages and only 5% of male (Chi^2 Pearson = 3,855032, p = 04960). The second factor influencing sharing experiences on blogs and/or webpages is the place of residence (Chi^2 Pearson = 18,86790, p = ,00029). More young people living in big cities use their blogs to present opinions after visiting Krakow (7%) than these living in medium-sized cities (5%) and in the country (2%). Millennials from small cities are more reluctant to this form of revealing their opinions. Definitely a significant factor is the professional status (Chi^2 Pearson = 4,269924, p = 0,03327): 6.5% of students and

4% of white-collar workers among surveyed population share their opinions on blogs, which are the highest percentage in the group of analyzed Y generation.

Among surveyed young tourists in Krakow only 12% put their opinions about the visited place on TripAdvisor, what is a bit surprising. The determinants of writing reviews on TripAdvisor are: the place of the residence, professional status and frequency of travelling. As it can be expected more active are Millennials from big cities (5% share their points of view), middle size cities (4%) and the country (2%). In regard to professional status the most willing to present opinions on TripAdvisor are white-collar workers (5% of Millennials) and students (4%). The frequency of travelling has also a significant influence: the more one travels the most active in sharing his/ her opinions on TripAdvisor is (6% of travelling more than 4 times per year). But also does it 3% of travelling twice a year, which is a second high result. It can be explained that the journey is very meaningful for them.

From the point of view of the aim of the article the most important is the assessment of Y generation commitment in sharing opinions on accommodation services in Krakow using ICT. The findings prove that 66% of this group share their comments on this matter. The frequency of posting opinions is different: 22% put them sometimes, 19% rarely, 17% often, 8% very often.

Moving on to greater details the cross tabulation analysis was carried out. It let identify determinants of tourists sharing opinions about accommodation in Krakow. Results show that statistically significant is the influence of: the place of residence, education, professional status, subjective opinion of own material status.

As far as the place of residence is concerned young inhabitants of medium size cities (20-200 thousand inhabitants) and big cities visiting Krakow the most frequently assess accommodation on Internet or using other possibilities given by their mobile devices: 7% and 5%, respectively. These two groups act as recommendation sources also in category "very often": 3% and 4% respectively.

Y generation surveyees with secondary and high education recommend accommodation more frequently than others. Frequently do it 7% of Millennials with secondary education and 10% with diplomas. Very often 3% and 5%, respectively.

In case of generation Y respondent's subjective assessment of his/her material situation also has an influence on sharing opinion about accommodation in Krakow (Chi^2 Pearson = 37.1170, df = 20, p = .011330). Tourists assessing their financial situation as good assess accommodation the most frequently. In the category often sharing their opinion on these services they constitute 7% (while Millennials assessing their situation as average 5% and as very good 4%). Regarding sharing very often there are 4% of Y generation tourists from Krakow who do it (other groups are only 1% or 2%). As far as sometimes is concerned young tourists perceiving their material situation as good are also the most active: they constitute 10% of tourists sharing their opinions on accommodation services (while Millennials assessing their situation as average 7.5% and as very good 4%). Generally surveyees with bad and very bad material situation don't put their opinion at all.

Professional status also matters (Chi^2 Pearson = 56.2327, df = 35, p = .012879) but the influence is not so clear. In the group of Millennials who visited Krakow often assessing accommodation after the trip there are 5.3% of students, 5.6% of white-collar workers and 2.4% of manual worker. Among researched tourists the accommodation is assessed very often by 3.4% of white-collar workers and 3.1% students. In the group of surveyees in Krakow uploading recommendation and critical remarks regarding accommodation services sometimes there is 8% of students, 5% of white-collar worker, and 3% of both manual workers and self-employees.

7. Conclusion

Results prove that tourists in Krakow use social media for sharing their experiences after a visit in the city. Visitors formulate both recommendations and critical reviews. Findings support the opinion that Y generation is more likely to share their opinion than the general population: nearly 70% of young tourists in Krakow present their opinions.

The survey of Millennials show that determinants of their activity in social services in regard to sharing opinions are: gender (women are more likely, the difference is 11% points) and education (people with secondary education are more active than with higher, the difference is 7% points).

Sharing opinions in blogs or on webpages by Y generation is less popular than in social services, but still it done by 15% of Millennials visiting Krakow. Also in this case statistically significant factors are: gender, the place of residence and professional position.

Results show that only 12% of Y generation tourists in Krakow write their reviews on social platforms (like TripAdvisor). Statistically significant determinants are: place of the residence, professional status and frequency of travelling.

Remarks concerning accommodation services after visiting the destination by Y generation representatives visiting Krakow are common: 2/3 of surveyees claimed they upload them.

The most active Millennials are: tourists with secondary education, students or white-collar workers from medium and big cities, with good material situation (according to their opinion).

Findings lead to the conclusion that young tourists visiting Krakow are important creators of the image of accommodation services in visited destination. Taking under consideration that in 2016 approximately 12 million of tourists visited Krakow and assuming that 1/3 of them were Y generation it means that about 3 million opinions about the accommodation services in Krakow have appeared in social media. It is a very serious marketing factor.

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Chapter **30**

Adjusting Entrepreneurial Orientation for Researching Micro and Small Travel Agencies and Tour Operators[1]

Rafał Kusa

1. Introduction

The presented examination is a part of comparative research on entrepreneurial orientation (EO) of for-profit and non-profit organisations. The preliminary analysis of both groups showed that organising and selling tourist products is one of the common areas of their activity. Within tourism industry, the entities operating in these fields are called tour operators (TO) and travel agencies (TA). In business realm, some of them operate as international corporations or franchise chains. In our research, we focus on micro- and small-sized (in term of employment level) TAs&TOs, that operate independently.

The entrepreneurial orientation is a widely accepted construct utilised to measure the level of entrepreneurship in organisations. It was originally designed for big-sized organisations and it has been proved that it properly reflect the phenomenon of organisational entrepreneurship. Facing the dilemma of implementing universal or specific measurement tool, we discuss the possibilities and limitations of utilising EO scales towards tourist enterprises. The main research problem behind the paper is whether EO scales can be used in micro- and small-sized TAs&TOs. We assume that they require a special research approach, including modification of the measurement scales (while large-scale tour operators, that represent corporate traits, can be researched using the dominant methodology of EO). The aim of the paper is to identify the adjustments of the EO scale, that are required to reflect the specific traits of TAs&TOs and their non-profit counterparts.

To answer the research question and achieve the goal, the literature will be studied, with a focus on examples of EO-based surveys in the tourism industry and specific traits of researched type of entities (TAs&TOs).

2. Organisational entrepreneurship and entrepreneurial orientation

Organisational entrepreneurship reflects the entrepreneurial behaviours in existing organisations. They are highlighted in the concept of corporate entrepreneurship that is expected "to revitalize innovation, creativity, and leadership in corporations" (Kuratko & Audretsch, 2013, p. 332). The entrepreneurship occurs in varying degrees and amounts within organisations (Morris, 1998, p. 18). Miller (1983, p. 771) proposed that "an entrepreneurial firm is one that engages in product – market innovation, undertakes somewhat risky ventures, and is first to come up with 'proactive' innovations, beating competitors to the punch". Basing on Miller's definitions, a concept of entrepreneurial orientation (EO) was developed and operationalized into the measurement scales. One of them was built by Covin and Slevin (1989, p. 75), and it was comprised of three dimensions: risk-taking, innovativeness, and proactiveness, where each dimension was measured with three items. The scale proposed by Lumpkin and Dees (1996, p. 137) was augmented by adding two more dimensions: autonomy and competitive aggressiveness. These scales were modified, as well as new scales were proposed[2]. There are different measurement approach towards EO concept (e.g., unidimensional versus multidimensional) that are "consistent with fundamentally different conceptualisations of the EO construct" Covin and Wales (2012, p. 677).

Researchers examine the relationship between EO (and its dimensions) and firm's performance, however, the results are not clear, and they indicate many factors that influence the relationship. For example, Hughes and Morgan (2007, pp. 657-658) found that, uniform effort in all EO dimensions does not generate consistent gains in business performance, but proactiveness and, to some extent, innovativeness is essential to securing improved performance for firms at the embryonic stage of development, while Frank et al. (2010, p. 194) concluded from their research that it is not advisable using EO when "a dynamic environment is combined with low access to financial capital". Nevertheless, entrepreneurial orientation is perceived useful for practitioners as a source of managerial recommendations Schillo (2011, p. 24), and there are many EO-based studies dedicated to different types of activity. However, there is not too many of them focused on the tourism industry.

3. Travel agencies and tour operators

The tourism represents one of the strongest industries. The direct contribution of travel and tourism (T&T) to GDP was USD 2,306.0bn (3.1% of total GDP), and the total contribution of T&T to GDP was USD7,613.3bn (10.2% of GDP) in 2016. T&T directly supported 108,741,000 jobs (3.6% of total employment), and the total contribution of T&T to employment, including jobs indirectly supported by the industry, was 9.6% of total employment (292,220,000 jobs) (World Travel and Tourism Council, 2017).

The industry is diverse and consists of enterprises of different types: 12% operate in accommodation; 65% in food and beverage serving activities; 16% in passenger transport; 2% in car and other rental; and 4% in TA&TO and related services (Eurostat, 2014a).

According to Eurostat, travel agency activities include activities associated with "selling travel, tour, transportation and accommodation services on a wholesale or retail basis to the general public

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2   The review of EO scales was presented by Wójcik-Karpacz (2016, pp. 600-605).

and commercial clients", and tour operator activities include "arranging and assembling tours that are sold through travel agencies or directly by tour operators. The tours may include any or all of the following: transportation; accommodation; food; visits to museums, historical or cultural sites; theatrical, musical or sporting events" (Eurostat, 2014b, p. 134). In practice, many travel companies do both, i.e., supply their own services or products, and marketing and selling the products and services of others. Some of these companies focus primarily on serving travellers coming from other destinations (we refer to them as inbound or hosting operators), while other focuses on serving travellers in their domestic or regional market seeking to travel to foreign destinations (we refer to them as outbound or sending operators) (Saffery et al., 2007, p. 6). In 2014, TA&TO recorded a turnover of 163 billion euro, that represented 17% of the turnover in tourism industries, compared with a 8% share in value added at factor cost (Eurostat, 2014a).

Non-profit organizations (NPO) also provide a services specific for TAs&TOs, i.e., they compose and offer packages to their members, however, their market share is small (e.g., in Slovenia in 2011, about 4% of all trips for private purpose were organised by non-profit organisations) (Eurostat, 2014b, p. 137).

The majority (80%) of firms operating in the tourism industry are micro-, small- and medium-sized enterprises (Robinson, 2012, p. 70), independently owned by sole or joint owners (Thomas et al., 1997). Shaw and Williams (1998) highlight under-capitalization, little (if any) improvement or development and high failure rate among small tourist enterprises. Planning survey, we need to distinguish small independent travel agencies (that usually can be classified as micro enterprises) from big corporates providing services for tourist, including global tour operators.

4. Review of research on EO in tourist enterprises

Entrepreneurial orientation has been utilised in research on enterprises representing tourism industry. Kamal et al. (2016, p. 118) investigate the entrepreneurs' new product development capabilities, as well as market responsiveness, and they state that "implementation of EO is seen necessary by small and medium travel agencies in Malaysia focusing on initiatives such as innovation, proactive and risk-taking within business operation". Tajeddini (2010, p. 228) referred to EO in the hotel industry in Switzerland in a context of customer orientation and innovativeness and found that higher levels of customer orientation, entrepreneurial orientation and innovativeness are associated with improved business performance. Liu and Lee (2015, p. 139) used data from medium and small vendors in night markets in Taiwan, wherein the EO played the role of dependent variables. Their findings suggest that accessing diverse knowledge and applied new knowledge when introducing a new service or product are important sources of entrepreneurial orientation (p. 148). Roxas and Chadee (2013, p. 1) used structural equation modelling and data from a large-scale survey of firms in the tourism sector in the Philippines. They found the strong mediating effect of entrepreneurial orientation on the relationship between the institutional environment and firm performance.

While Liu and Lee (2015), as well as Roxas and Chadee (2013), adopted nine items EO scale developed by Covin and Slevin (1989), Omerze (2016, p. 101) measured EO, on a sample of tourist companies in Slovenia, with 20 item scale focused on five dimensions (risk taking, proactiveness, competitive aggressiveness, autonomy, customer orientation). Her findings support the view that a company with more developed entrepreneurial characteristics and organisational culture will

be more innovative, and EO, as well as its dimension separately, are positively related to service innovation (pp. 105-106).

The presented surveys prove that entrepreneurial orientation can be utilised in research on enterprises operating in the tourism industry. However, most of the presented surveys were not aimed *explicite* at exploring the nature of tourist enterprises; tourist enterprises were a survey pool for testing theory relevant to different types of activity.

5. Specific traits of travel agencies related to EO

Among specific traits of travel enterprises, including TOs&TAs, there are some traits associated with EO and its dimensions (innovativeness, risk-taking, proactiveness, autonomy and competitive aggressiveness).

Ioncică et al. (2015, p. 495) found that innovations in the diversification and renewal of tourism products, processes of organisation, trading and promotion of tourism services have a very important impact on the efficiency and sustainability of the activity of travel agencies. They posit that travel agencies favour mostly the introduction of new informatics systems for booking, ticketing and management. This is in line with previous research and predictions about the role of ICT, that was expected to revolutionise all business processes, the entire value chain as well as the strategic relationships of tourism organisations (Buhalis, 2003). Nowadays, TAs&TOs additionally face competition from new intermediaries of tourist distribution, as online accommodation booking sites (Carlos et al., 2016, p. 39).

TAs&TOs are exposed to many risks. Oroian and Gheres (2012) identified a several risk specific for travel agencies, that were classified by them as organisational, environmental, economic, political, local and related to competitiveness, infrastructure and business insufficiencies. The most relevant risks were: increase in fuel cost, a cost of transportation, an image of the country/destination, a decrease in disposable income, terrorist activities, airline safety, natural disasters, currency fluctuations, airport safety and security, seasonality, wars/conflicts, political instability in neighbouring countries (p. 1601). An important issue for risk management in sending TAs&TOs is the distance between their headquarters and the places of their operations, as well as geographical dispersion of these places. Small-scale entrepreneurs in tourism use mostly family resources and labour (Shaw & Williams, 1998) that reflect their tendency to risk-avoidance.

Despite significance of proactive approach in entrepreneurial activity in tourism, many small-scale entrepreneurs lack business planning and growth strategies, as well as marketing activity (Shaw & Williams, 1998). TAs&TOs (including micro-sized) operate internationally, what require them to take a global perspective when planning. Planning in the tourism industry is influenced by seasonality. Aguiar-Quintana (2016, p. 98) posit that traditional travel agencies must study the market and its different segments in depth to find possible alternative survival strategies. They have identified 23 strategies recommended for travel agencies.

Autonomy is an important issue related to small-sized tourist enterprises. As it was mentioned before, most of them are independently owned by sole or joint owners (Thomas et al., 1999). Moreover, many of them run a tourist business for a lifestyle reasons, rather than for an economic ones (Shaw & Williams, 1998). Getz and Petersen (2005, p. 219) surveyed family business owners in the tourism and hospitality industry in two resort areas (one in Canada and one in Denmark), and they found the predominance of lifestyle and autonomy orientations (as owners' attitudes), as well

as profit and growth orientation. Beside autonomy of the owners, an important role is played by the autonomy of employees who serve tourists (often far away from the place of their residence). They have to solve problems occurring in the tourist destinations, but they have also possibility to identify and explore the local opportunities.

Shaw and Williams (1998) noticed non-entrepreneurial behaviours of many owners of small tourist enterprises and even called them 'non-entrepreneurs' or 'constrained entrepreneurs'. However, even they are run by non-economic motives and do not tend to compete, they experience high-level competition. That can lead them, together with the structure of tourist product, as well as limited own resources available, to collaboration, also beyond their value chain. As stated by Mason (2008, p. 128) in relevance to tourism, "linkages in the industry are becoming more common. Even apparently competing organizations may be linked". It suggests, that when analysing the relationship of TAs&TOs with other entities, the co-opetitive approach (that reflect concurrent collaboration and competition) can be relevant, rather than competitive aggressiveness.

Other recommended adjustments are associated with the scale of activity and enterprise size. When measuring EO in micro- and small-sized travel agencies and tour operators (that are a majority of all TOs&TAs), adjustments of EO scale should reflect specific traits of MSEs. Most important of them are: the role of imitative innovations in micro enterprises, ability to change radically the scope of their business or to customize their offer, the role of the enterprise's strategy, attitude towards other organizations (including competitors and willingness to cooperate with them), the level of liabilities, the autonomy of the micro enterprises' owners (Kusa & Duda, 2017).

Additionally, in a case of micro- and small-sized enterprises operating within tourist industry, the international dimension is an important and specific trait. While this trait is not common in the case of most of the micro enterprises, a majority of tourist enterprises operate internationally (e.g. serving clients from abroad or delivering to domestic clients services on foreign markets).

6. Recommendations for measurement EO in travel agencies

Taking into account the above characteristics of micro- and small-sized travel agencies and tour operators, the recommended adjustments of entrepreneurial orientation scale should reflect: the importance of mirror innovations, the role of ICT, high value of autonomy of entrepreneurs, as well as employees serving tourists, collaborative relationships with other entities, that are parallel to competition, and the international dimension of activity. Some modified or additional questions consisting EO scale dedicated to micro- and small-sized TAs&TOs are presented in Table 1.

Table 1. Proposed additions and modifications of EO scale dedicated to micro- and small-sized travel agencies and tour operators

EO dimension	Modified or added statement
Innovativeness	We use ICT more intensively than our competitors. We introduced many new products and new destinations.
Risk-taking	We book in advance places in transportation means or new destinations that we believe can be attractive. We invest in our resources (accommodation, transportation, outbound services).

Proactiveness	We successfully identify and explore new market trends and customer needs. We engage in improving or promoting new destination and tourist attractions.
Autonomy	Our employees are allowed to take bold decisions when they are serving tourist groups (e.g., to improve our product or to solve a problem).
Interorganisa-tional Relation-ship	We are ready to cooperate with our competitors to explore a business opportunity (e.g., by sharing resources, creating or developing new products or destinations).

Source: own work.

In the case of tools dedicated to a particular group of organisations, some terminological modifications can be required, as done by Liu and Lee (2015, p. 144), who surveyed vendors in night markets using the items from scale of Covin and Slevin (1989) wherein they replaced "products" by term "food or beverage".

7. Conclusion

The presented examination confirmed that entrepreneurial orientation (EO) can be utilised for measurement in micro- and small-sized travel agencies and tour operators, what was the main question behind the paper. According to the aim of the paper, the adjustments of the EO scale, that are required to reflect the specific traits of TAs&TOs and their non-profit counterparts have been identified. They focus on the importance of mirror innovations, the role of ICT, the high value of autonomy of entrepreneurs and employees, collaborative relationships with other entities, and the international dimension of activity.

The study here has some limitations that offer possibilities for future research. The above conclusions are a result of the literature study and require to be empirically verified. The literature study was focused on publications from the field of the tourism industry and organisational entrepreneurship, but it embraced only selected sources, while both fields are replete with numerous publications (however, only a few publications that combine both fields have been identified). As it was mention in the introduction, the study is a part of a research project focused simultaneously on for-profit and non-profit organisations operating in tourism (as well as in other fields). One of the dilemmas associated with the planned comparative survey is related to the measurement tool, and it leads to the question: whether one universal measurement tool is to be used or many tools adjusted to particular groups of organisations in parallel? This study shows that the latter solution is possible.

The study suggests that the interorganisational collaboration can play an important role in pursuing opportunities. It is recommended to explore the role of interorganisational collaboration in organisational entrepreneurship.

Finally, it is recommended to employ the methodology of entrepreneurial orientation in researching enterprises operating in the tourism industry that is one of the most significant industry in countries' and global economy.

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Chapter **31**

Managing the Functional Urban Development Through Implementation of the Silver Economy Concept – A Regional Perspective

Ewa Kubejko-Polańska

1. Introduction

Development of a particular city depends to a large extent on a size of demand for goods and services reported by people inhabiting in the city as well as those making for it from the surroundings. Therefore, the development of functions in the silver economy sector is an extremely important area of strategic intervention aimed at providing an appropriate situation of particular cities in a socio-economic space of a region.

The implementation of the silver economy concept in an expansion strategy of the region can bring a positive economic aspect, if its assumptions are simultaneously taken into consideration in expansion strategies of socio-economic development of lower-level governments. The documents should have a high degree of conformity of aims and directions of strategic actions. However, the above-mentioned issue requires appropriate management as well as an increase of possibility to coordinate regional actions (Golinowska, 2014, p. 28). It is the intervention area which may bring a crucial and permanent multiplier in the regional perspective.

In the study an attempt was taken to determine strategic intervention areas in the context of managing the functional development of the cities in Podkarpackie region as well as to adapt them to use a silver economy potential. The aim of the study was also to verify whether and to what extent the local authorities make specific arrangements concerning the use of the potential of the ageing society, when managing the development of particular cities. It was done by analysing diagnostic and projection elements: current strategic documents regarding socio-economic development of the region, socio-economic development strategy of 20 cities of at least county level in the discussed region, current strategic documents concerning socio-economic development of Rzeszów Functional Urban Area (RFUA) as well as socio-economic development strategy of 13 municipalities of RFUA.

2. Transformations of functions of cities in the context of the ageing society

The concept of the silver economy has two meanings according to S. Golinowska. The first consists in demonstrating the economy evolving in the direction of the needs of older population without its special interventional direction. The second shows the possibility of using the ageing population to such an orientation of the development in which the change in the structure of needs of the population and a certain rise in their activity could become a source of economic progress and growth. Both the social and economic component of the silver economy are equally important. The social importance of the concept is to face the needs and aspirations of an ageing population, whereas the economic one is to indicate the benefits of activating demand and supply factors (Golinowska, 2014, p. 19). Both social and economic constituents of the silver economy are equally important. However, the research indicate that in numerous cases the understanding of such concept comes down to development planning as well as to satisfy the needs of its social character (Kubejko-Polańska, 2017a, pp. 224-225).

The phenomenon of ageing society concerns cities and urban areas in particular, where the pace of disadvantageous demographic transformations is larger than in rural areas. The forecasts of changes in population for cities of Podkarpackie region depict dynamic growth of population percentage in the age of 60 and higher (Fig. 1). It means permanent growth of significance of demand and supply factors of the elderly people in the economy of the region.

Figure 1. The forecast of the number of population according to age groups in cities of Podkarpackie region up to 2050 (in percentage)
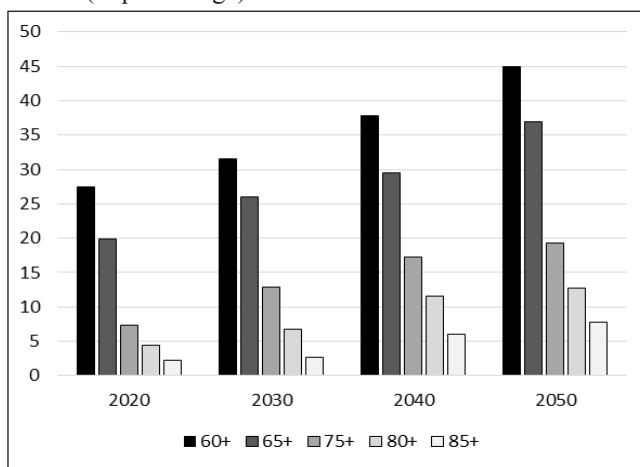
Source: own work based on *Prognozy ludności do 2050 roku dla powiatów oraz miast na prawach powiatu na lata 2014-2050*, GUS 2014.

Demand factors represented by seniors include the purchasing power and consumption with a significant potential for economic growth. In contrast, the supply factors include longer work, higher qualifications, experience and stability of life (Golinowska, 2014, p. 19). It is very important, because according to forecasts, in 2050 the number of people aged 60+ will exceed 50%

of the total number of inhabitants in urban areas of mostly counties. In other counties of Podkarpackie Voivodship the situation will only be slightly better (*Prognozy ludności…*, 2014). Rzeszów, where the index is predicted to be at the level of 39%, will be an exception. However, there occurs an aggregation of the discussed effects related to demographic transformations in the territory of RFUA, and creation of economic development of the entire region constitutes its challenge (*Kryteria Delimitacji...*, 2013, p. 4). Thus, adaptation of the local economy to demographic transformations as well as development of functions in the silver economy sector is a significant area of strategic interventions. They should aim at providing an appropriate place of particular cities and their functional areas in socio-economic space of the region and Poland.

3. Urban policy and development of functions in the sector of silver economy

Urban policy is a task which should be realised in an integrated manner on all levels of territorial division of the country, although its effects will be perceptible always in a specific city (especially by inhabitants and economic entities). *Interurban* policy should be at national or regional level, while at local level there should be *intraurban* policy, a subject of which will be a specific city. Determination of general directions of urban policy should be the basic task of a country. By contrast, the regional level of urban policy should perform a role of a 'bridge' between the policy of the country and an internal policy of each city. The basic and the most important level of realisation of urban policy is the local level because a specific city and its problems appear only here. It is the territory of a given country where 'transformation' of interurban policies into the intraurban one occur and its basic objective is to provide local development (Parysek, 2011, pp. 123-125). According to W. Christaller, the rank of a given centre is indicated by the size and the market range of its central functions. They include non-local actions which serve the non-urban area. The city and the surrounding area constitute certain functional entirety where the city is the functional centre of the surrounding area (Sokołowski, 2006, pp. 41-45). Therefore, actions of regional and local authorities should aim at optimum use of potential related to demographic transformations for development of those already existing and the new functions of cities. Only owing to that they can assure stable socio-economic and spatial development of particular territorial units on a long-term basis.

The key aspects in managing the functional development of the city:
- determination of a functional type of the city,
- determination of the size of economic base (in accordance with *the economic base theory*),
- determination of a structure and a degree of economic base diversification,
- support of quantitative and qualitative development of central functions (in accordance with *Christaller's central place theory*),
- increase of the spatial range of the central functions,
- improvement of position in the functional hierarchy of the city in the region,
- increase of city service rates.

4. The ageing of society and silver economy development planning in strategic documents

The awareness of local government of the discussed cities and municipalities in Podkarpackie region, concerning the presence of the key problem of ageing society, is indisputable. This was confirmed by the analysis of descriptions of socio-economic situations of 20 cities of at least county level, as well as 13 cities and municipalities of Rzeszów Functional Urban Area. In the analysed strategic documents such barrier was defined to be one of more significant challenges of the local policy. Considering the scale and inevitability of the problem of growing number of elderly people, it had to become a subject of discussion and interest for both community and local government. Nevertheless, in most cases the rapidly increasing 'silver market' was not recognised to be the opportunity of socio-economic development (Tab. 1).

Table 1. The analysis of development strategies of county towns, cities with the rights of a county in Podkarpackie region as well as cities and municipalities of Rzeszów Functional Urban Area

The number of territorial units analysed	Ageing society identified as a weak side of the city (diagnostic part)	Silver economy in the area of city development opportunities (SWOT analysis)	Strategic actions dedicated to the elder (projective part)
20 of cities of at least a county level	15 (75%)	4 (20%)	17 (85%)
13 municipalities of RFUA	9 (≈70%)	0	13 (100%)

Source: own work.

In none out of 20 analysed documents for cities being at least a county the literal provision, saying that development of silver economy could have a positive influence on improvement of economic situation of the city, was found. A specific reference to the potential resulting from demographic transformations can be noticed merely in four cities. These are mainly opportunities connected with creating new workplaces as a result of inhabitants' growing demand for social and health services. The age-friendly city as local development opportunity appears only in one city. The ageing society was identified as the weak side of the local economy also in case of cities and municipalities of Rzeszów Functional Urban Area. This being the case, the barrier was determined to be one of the most vital challenges of the local policy in the analysed strategic documents for RFUA, to which the majority of the latest strategies of cities and municipalities of the discussed area directly refer. The diagnosis of demographic situation published in *Revitalisation Program for Rzeszów Functional Urban Area* (2015, p. 63) unequivocally indicates that in the coming years new challenges, which will directly result from the age structure of RFUA population, should be expected, despite currently advantageous demographic situation of the area. The potential of the elderly people was not recognised to be an opportunity of socio-economic development in any case of RFUA's cities and municipalities. The literal provision saying that development of sliver economy could influence the improvement of economic situation of particular cities

and municipalities, thus the entire region, was not found in any of the analysed documents (both for RFUA and cities and municipalities included in its territorial area). The strategic documents contain no reference to the potential resulting from demographic transformations. No document, within the SWOT analysis, includes any specification of opportunities related to creating new workplaces, growing demand for social and health services of inhabitants or creating age-friendly cities or communities (Kubejko-Polańska, 2017b, pp. 203-205).

## 5. Development of functions of cities in the area of silver economy by propagating *active ageing*

Judging from the analysis of the socio-economic situation of the cities discussed, it should be expected that the widely understood silver economy as well as creating solutions consistent with assumption of so-called *age-friendly cities and communities* shall be a field of strategic actions in all studied units. It thus shall become a key to adapt the functional structure of the cities to new demographic considerations.

The most complete explanation of what is the meaning of *age-friendly cities*, and local self-government in particular, and how they should function, is included in the document of the WHO Global Age-friendly Cities and Communities Network: *Age-Friendly Cities: a Guide*. The cities that support active ageing are defined as age-friendly cities. This is possible by providing optimal conditions for health, safety and participation in order to raise quality of life of older people. In practice, it adjusts its structures and services so that they are available to the elderly and respond to the requirements of the residents with diverse needs and possibilities (Global Age-Friendly Cities ..., 2007).

In order to determine directions of actions taken by local government in the field of creating the city function development together with using the potential of the ageing society, a general analysis of projection part of all available development strategies of cities of at least counties as well as cities and municipalities of RFUA was performed. For this purpose, eight areas related to the life in the age-friendly cities were used, also referred to as key aspects of adapting cities to the phenomenon of ageing residents (Global Age-friendly Cities…, 2007):

- public spaces and buildings,
- transport,
- housing,
- social participation,
- respect and social integration,
- civil participation and employment,
- communication and information,
- community support and health services.

Figure 2. Areas of strategic actions in the projection parts of county city development strategies and towns with the rights of a county in Podkarpackie region
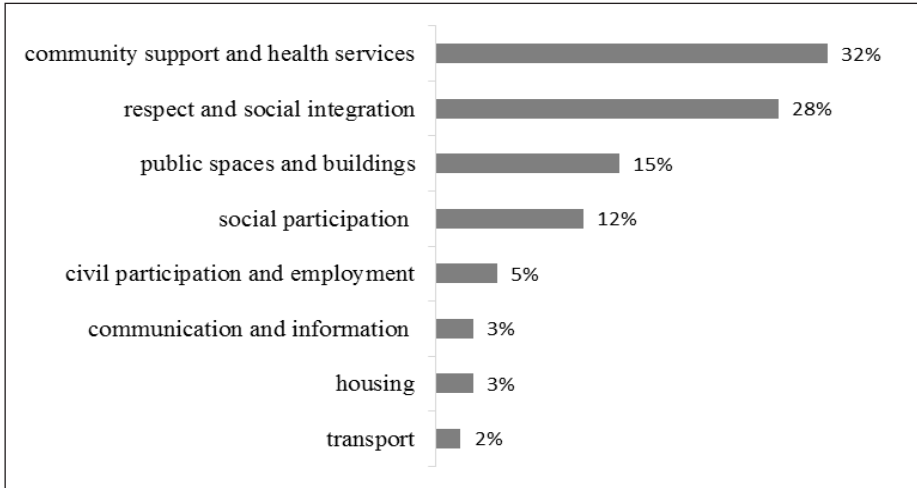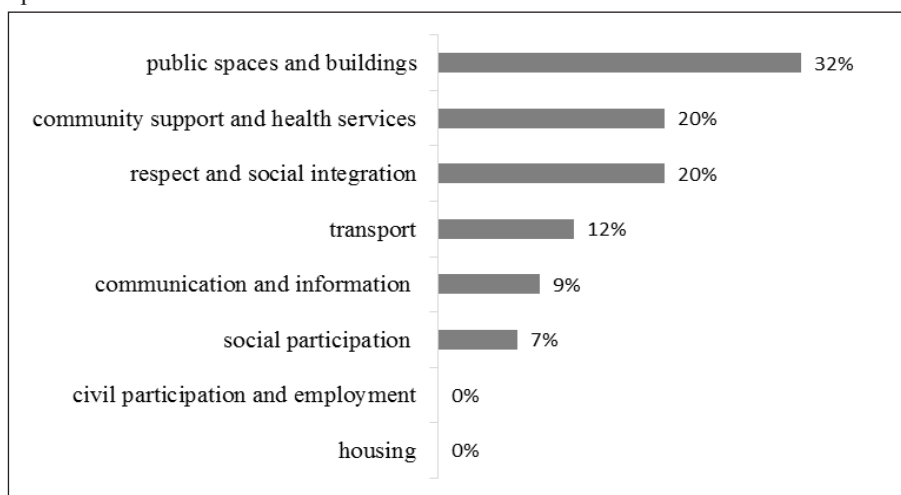

Source: own work.

The performed analysis enabled to determine the areas of strategic actions in particular cities as well as to outline a clear picture of situations in generally treated county cities and towns with the rights of a county as a specific level of local planning. The selection of cities included in the analysis was inspired by their role in the settling system of the region. A considerable amount of functions performed in cities of such administration hierarchy level should be treated in terms of central functions (in accordance with *The central place theory* by W. Christaller) (Sokołowski, 2006, pp. 41-45). It means that the cities offer a number of non-local functions servicing a non-urban area. Therefore, functional development of particular cities is significant for socio-economic development and providing an appropriate living standard of the population in the entire region.

When analysing all at least county towns together, it can be noticed that actions related to the support of elderly society as well as preparing wide and customised health service offer (Fig. 2) are the most frequently undertaken areas in projection parts of development strategy (32% of the whole). The actions sign up the most fully to the areas of strategic planning at the regional level. The second area is respect and social integration (28% of all actions). A set of actions and strategic tasks relating to other inhabitants' perception of the elderly constitutes a forecast of positive and much-desired changes of thinking on the issue of ageing. Another group of local government activity in the area of public spaces and buildings included mainly actions related to removal of architectural barriers in the space of the cities (15% of actions). Chances of possibly the longest (independent) moving of the elderly in cities constitute a significant share in building the concept of age-friendly cities. Necessity to increase the elders' involvement in life of the city, i.e. the area related to social participation, strongly emphasized in some urban centres, is noteworthy as well. The area included 12% of strategic actions taken in the analysed cities. Considering the influence of particular strategic areas on functional development of the cities at least of county, tackling the needs and aspirations of the ageing population, i.e. orientation towards social meaning of silver economy concept, should be noted. Development of economic element of the silver economy, that

is civil participation and employment connected with opportunities of voluntary and professional work, construction industry which builds physical surrounding of the elderly person, transport enabling to move without any problems and extremely significant issues related to communication and information for the elderly, constitute in total merely 13% of planned strategic actions.

Figure 3. The areas of strategic actions in projection parts of development strategy of cities and municipalities of Rzeszów Functional Urban Area

Source: own work.

The most frequently taken areas in projection parts of development strategy of cities and municipalities of RFUA are revitalisation actions aimed at adapting public space and buildings to the needs of the elderly (32% of the whole actions) (Fig. 3). It is the most consistent area of planning, signing up both to projects of strategic actions in the *Revitalisation Program for RFUA* (2015, p. 203) and to objectives and actions of *ITI RFUA Strategy* (2016, pp. 158, 190). The second area (20% of planned strategic actions) is support of the elderly as well as preparation of wide and customised offer of health services. The actions sign up the most fully to the areas of strategic planning at the regional level (*Regional Development Strategy – Podkarpackie 2020*) as well as in the strategic document *Diagnosis of the needs of the elderly inhabiting in the territory of RFUA*. Another area which is frequently planned in objectives and strategic actions on the local level, is respect and social integration (20% of actions). On the other hand, 12% of actions of local self-government were planned to the benefit of moving in the space of cities and municipalities without any problem, i.e. issues related to the improvement of functioning of public transport. Necessity to increase the elders' involvement in life of the city, i.e. the area related to social participation, strongly emphasized only in 9% of actions though, is noteworthy as well. In cities and municipalities of Rzeszów Functional Urban Area (like in cities of county at least of the analysed region) the areas of strategic planning which require definitely more attention from local government are: civil participation and employment, construction industry as well as issues related to communication and information for the elderly.

In the majority of cities strategic actions come down to satisfy the needs of the social dimension of the silver economy. Therefore, they influence the formation of functions mainly in the area of non-market services. The economic aspect of silver economy (shaping mainly the area of market services) is ignored or considerably marginalised. On the other hand, strategic action planning, taking social and economic elements into consideration, is significant for assuring the possibility of permanent, uninterrupted socio-economic development. Emphasizing almost exclusively the social issues may result in the lack of appropriate diversification level of functions in cities, and thus failure to fully use the potential of silver economy in the region.

6. Conclusion

The concept of the use of the silver economy potential is very poorly disseminated in the strategic documents of particular cities of Podkarpackie region. Development planning as well as implementation of its particularly economic aspect constitute the challenge in the area. It is essential because multipliers of currently taken actions in the area of functional development may become the source of progress and economic growth. The more "age-friendly" the city is, the more central functions it meets (greater city pressure, higher inhabitant service and inter-region flow) and larger and more diversified is the economic base, i.e. higher economic position. It should also be noted that actions aimed at mono-functionality (predominance of a single function in the economy base) constitute a threat for stability of city's economy on a long-term basis. It is important to diversify the offer of market and non-market services so as to take full advantage of the potential of the silver economy in the region. On the other hand, the fulfilment of territorial strategies in the areas should suit the use of ITI (Integrated Territorial Investment) instrument, which creates an opportunity to take effective advantage of public intervention.

When summing up the analysis, it should be stated that the silver economy and its economic potential should be more discussed. Writing this in the strategic documents gives the area an appropriate status. It is repeated, cited and verified in the local environment, building the awareness of the population in this way. More attention should also be put in building a positive image of the city, not to exacerbate negative associations with old age, stimulate entrepreneurship by showing development opportunities for local and regional economic entities. All the actions should serve to create functional development of particular cities and their functional areas as well as the entire region.

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