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Foreword

This collective work represents an overview of the most fundamental aspects of entrepreneurship as a particularly topical issue (as a theoretical concept) and a source of critical suggestions, opinions and recommendations for modern economic practice. The focus of this collection of studies is not to limit the discussion to the evaluation of problems faced by company managers in modern economic setting, but to provide a broader picture of conditions that may be created to facilitate the release of creative energy in human endeavour, in line with the rapid torrent of spatial and temporal transformations of the economic environment, which often follow quite unpredictable paths of development.

For the clarity of the discourse, we decided to categorise the studies into (three) distinct sections. Section one (Olszewski, Baulant) provides a broad review of the concept of entrepreneurship as an area of interest visited not only by economists, but also by experts of many other disciplines. The input from the latter proved valuable for understanding of the nature of this phenomenon, with a wealth of conclusions that may readily be adopted in economic practice. C. Baulant emphasises the role of network-type relations in building conditions for improved competitiveness and effectiveness of organisations at the onset of the 21st century. The author places focus on networking processes that occur at the mezzo level, as a fundament for effective strategies designed to induce innovation and as a precondition for effective distribution of labour.

Section two of this publication addresses selected aspects of company operation in the context of the various factors that determine the conditions of their operation. A. Szymańska underlines the significance of diversity management. Based on the results of own empirical research, the author concludes that diversity of factors that determine operation of companies can be seen as a vehicle for entrepreneurship. Hence, it seems important to ensure skilful and effective use of the various elements of diversity in managerial practice. The other study in this section, authored by a team of E. Cherkashyna, T. Pasko and D. Socha, provides an analytical evaluation of moral hazard in banking operation. In their empirical study of the phenomenon of moral hazard in the Ukrainian banking
sector, the authors emphasise the role of guarantee funds as mechanisms offering good potential for improving public trust in banking institutions.

In second parts (Section three) of this publication are also presents results of studies on various forms of entrepreneurship observed on regional and national level, including the problem of entrepreneurship in regions under systemic transformation. The latter aspect can be perceived from two angles. On the one hand, regions undergo deep structural transformations to help them transit from former command-and-control economies to modern market economies. On the other hand, regions are more and more often perceived as hubs of economic development and innovation. Structures of regions, in their various aspects, are studied in the context of increasing their capability of releasing creativity. Despite great difficulty in conducting regional analyses – due to the lack of reliable data or restricted access to such data, the team of E. Stańczyk and P. Stańczyk managed to provide an interesting and empirically grounded analysis of the results of EU accession on the development of entrepreneurship in the Lower Silesia region of Poland. P. Dobrzański in his empirical study presents factors responsible for the results obtained by Polish regions in the EU ranking of regional competitiveness.

Important insight into understanding of the various management dilemmas faced by companies in the region can be found in L. Pieczyński, whose extensive experience on top managerial positions adds validity to his opinions, comments and reflections on the most decisive factors of impact in the regional support for innovation on social and economic level.

An interesting analysis of entrepreneurship at national level can be found in the study by K. Andrzejczak. Her research addressed the specificity of regions in Sub-Saharan Africa as areas of intensive promotion and development of the private sector, effected through the use of international aid funds. Based on in-depth analyses, the author managed to provide an empirically grounded opinion on barriers to the release of potential factors of entrepreneurship in less developed economies.

The wealth of content presented in this collective publication can be approached as a concise review of the most important problems related to the perception of entrepreneurship as a highly topical issue today (theoretical concept) to be studied by empirical analyses to produce practical conclusions and recommendations usable at all levels of economic operation. The authors remain confident that their analyses will provide useful pointers and reflections to all our readers in a broad spectrum of scientific disciplines.

Leon Olszewski
ENTREPRENEURSHIP:
A GENERAL PERSPECTIVE
Leon Olszewski

Reflections on entrepreneurship – from micro level to that of national economies

Abstract: Entrepreneurship is an important area of research covered by many disciplines and involving analyses of various aspects of human activities. The utility of the concept is particularly evident in analyses related to business operation, as it offers methods to counteract the competitive pressures of the market. In modern economy, individual entrepreneurs represent the main driving force generating the effects of economic growth and development. This paper aims to provide deliberations on the concept of entrepreneurship as perceived from the viewpoint of the rapid changes in business environment and of the volatile conditions of modern economic operation. The main emphasis is placed on benefits offered by the interdisciplinary concept of capability approach in its various dimensions.

Keywords: entrepreneurship, economic growth, capability approach

Introduction

The spectacular market success of many companies in various economic conditions on the one hand, and the equally spectacular and unforeseen fiascos of many top-class managers who have failed to produce result in seemingly perfect strategies of corporate development on the other hand, does seem to raise important arguments for more systematic analyses of the phenomenon of entrepreneurship in all possible contexts of the term.

Entrepreneurship is clearly linked to leadership. Organisations, just like other social groups, are managed by leaders who define directions of activities and the distribution of tasks, thus determining the overall productivity of the entity under management. In the contemporary setting of volatile and – in some areas – quite radical changes in company operating environment, the operation of economic entities and institutions is subject to constant pressure forcing them to react to them in a prompt manner and decide on appropriate adjustment measures. The modern world is one of continuous perturbations. Selection of measures inadequate to the dynamics of changes in the external environment bears a high risk of failure or – at the very least – a drastic departure from the general trend of changes.
Over the last two decades of rapid technological development, state institutions have largely increased their promotion activities addressed to entrepreneurs, with the purpose of boosting the factors of economic growth, labour productivity, and innovation. State policies in this area have also attracted the interest of academic and educational centres. Problems of entrepreneurship are studied by many researchers and stimulate the development of analytical centres and research institutes wholly devoted to the task of studying the phenomenon of entrepreneurship from all possible angles. Researchers emphasise the significance of individual entrepreneurs, whose creativity dictates the dynamics of economic changes that define the present shape of production and organisation structures in national economies (Cieslik, 2017; Koryak, Mole... 2015).

This study is a presentation of selected thoughts and deliberations on the concept of entrepreneurship as a multi-dimensional phenomenon observed in the activities of individuals in their cooperation with other people or groupings, and as a type of activity in social groups intended to create new value within the broadly defined area of economic and social undertakings (OECD, 2009, 2011). Particular emphasis was placed on factors that facilitate the release of individual entrepreneurship and on conditions that offer positive feedback between all levels of entrepreneurship, from micro (entities) through mezzo (regions) to macro (national economy). Considering the great abundance of professional publications on the subject of entrepreneurship, the author deemed it worthy to present some of the most important aspects of this phenomenon as seen in the specific setting of a region that placed high in the ranking of the most successful beneficiaries of the Polish systemic transformation process. Entrepreneurship, as a field of scientific study, has seen spectacular development. Many research institutions and units were founded in most of Polish academic centres to provide a constant stream of empirical observation that can be employed for educational purposes, particularly in the training of future management cadres. The rapid progress of social and economic changes, both in the global and local dimension, does seem to reinforce the interest in this type of studies. Observations and analyses of global and local determinants of managerial activities carry great value and significance, both cognitive and practical. They offer good material for scientific reflection and seem to be a valuable source of constructive insight into the effectiveness of managers and whole organisations, with potential to improve the growth and development of individuals and organisations, and the social well-being in general.
Entrepreneurship in economic theory

The notable increase in the scientific study of entrepreneurship at the turn of the 20th and 21st centuries, stimulated by the search for factors of economic growth and competitiveness of companies, has brought a broad stream of ‘general review’ type of analyses. Their authors focused mostly on analyses of the available theoretical and empirical conclusions on all applicable levels of economic operation: micro, mezzo, and macro. Two distinct peaks the historic study of entrepreneurship as a phenomenon can be observed (Baumol, 1968; Glosten, Amid, 1993; Deneulin, Stewart, 2002). The first peak of interest, characteristic for the early stages of scientific development of the field, was clearly related to analyses of factors of economic operation in the booming segment of companies. Descriptive analyses of the role of entrepreneurs in company management can be found in Cantillon, and Say, (Fillion, 2011). But it was Schumpeter (2011) who finally managed to emphasise the significance of entrepreneurs, particularly of their fresh ideas and approaches to company operation which can be a source of good market position in the fiercely competitive environment of the modern market. In Schumpeter’s opinion, entrepreneurship should be seen as the main factor in the development of economy as a whole.

The second surge in the development of research in entrepreneurship dates back to the end of the 20th and the early decades of the 21st century. With the rise of the Internet, the exceptionally rapid development of modern technologies and the ongoing liberalisation of economies, the pace of economic and social processes has reached unmatchable levels, resulting in a rapid transformation of lifestyles and activities of individuals and whole societies. Radical changes can be observed in the character of labour, civilizational patterns, political and economic configurations. Whole value systems evolve and change to adjust to the pressure of globalisation processes and to the effects of numerous technological innovations. We are witness to the emergence of a new global market economy as a realm that defies identification despite the wealth of advanced interdisciplinary analyses available on the subject. The third industrial revolution – that of the Internet, telecommunication and information – has drastically changed the conditions and modes of operation in modern management. The rapid spread of the World Wide Web brought wide access to information and a significant increase in the accessibility and offer of products. New sales platforms emerged, inspiring the competition and forcing them to adapt through constant innovation. Companies were offered a chance to drastically reduce the cost of operation through facilitated delegation of specialised services, such as bookkeeping or marketing, to large providers with global reach and extensive
knowledge of global markets. The inflow of new and innovative web platforms led to the evolution of modern information and communication infrastructure that greatly improves the ease and speed of economic operations through facilitated access to information and its rapid spread. The new economy offers unparalleled potential in many areas, from verification of business partners’ credibility, through exploration of new business ideas, to improved product circulation on limited markets.

With the development of robotics, genetic engineering, nanotechnology, biotechnology and quantum computing, the world is on the verge of the fourth revolution (Schab, 2016). The new environment brings radical changes in many of the fundamental conditions and factors of modern social and economic life. It offers radical improvements, particularly the ease of business operation and improved effectiveness, but – at the same time – has the effect of greatly augmenting the consequences of decisions (spectacular success or catastrophic failure). In the foreseeable future, this new environment will produce drastic shifts in labour market structure. We already are witness to sharp reductions of employment in the booming sectors of finance, banking and administration. This trend is paralleled by proportionate increase of employment in health care, robotics, education and other sectors – some of them have yet to emerge in response to new, hitherto unexplored needs of modern humans.

Economic publications fail to provide a unified definition of entrepreneurship to fully represent all of the aspects of the concept at hand. The multidimensional character of entrepreneurship makes it difficult to establish a synthetic definition to aptly represent the wealth of conclusions based on various theoretical approaches. The study of entrepreneurship should not be limited to economic sciences, as it is also largely shaped by aspects that belong in the realm of management, sociology, psychology or political sciences. At the same time, proper examination of the concept requires placing it in specific socio-economic and political contexts and in close relation to the existing regulations and policies of natural environment protection.

As a starting point for our attempt at defining the phenomenon of entrepreneurship, let us assume the study of qualities characteristic for entrepreneurial individuals (Baumol, 1968; Glosten, Amid, 1993). Activities of entrepreneurs can be evaluated using a broad collection of indices, most typically – based on generated profit. However, this approach seems to emphasise distinctions rather than uniformity of definition, as it does not offer proper representation of differences between small companies, local corporations and global conglomerates. The importance of entrepreneurs in production activities is emphasised by Baumol (1968) in his overview of theories of entrepreneurship. Here, the role
of the entrepreneur is mostly that of an organiser. In pursuit of their production goals, they are forced to adopt innovative approaches in the formulation of their production plans and adapt them constantly in response to changes in supply and demand. This requires of them certain personal qualities, mostly those involved in the adaptation to the changing conditions of production operations. The ability to predict future market trends, the skill of adopting the organisation to changes in business environment, the readiness to face risk – these are the most important qualities expected of entrepreneurs. In effect, an entrepreneur is typically perceived as innovator and organisational leader focused on creative methods in the realisation of production plans.

This aspect of entrepreneurial activities is emphasised by Schumpeter (2011). Here, the entrepreneur is a person involved in creative destruction that stimulates progress and economic development. Innovations introduced by entrepreneurs have the power of changing the existing institutional order, confronting the existing routines and acquired behaviours, and forming new equilibriums in social relations. The problem of entrepreneurship in Schumpeter’s approach can be viewed from various angles, but the main focus remains on innovation as the most important vehicle of company growth and, consequently, the main factor in the growth and development of national economies.

Presently, on the verge of the fourth industrial revolution, problems of entrepreneurship remain not only topical, but also essential for the understanding of the new environment in which innovation and creativity of broadly defined entrepreneurs serves as the vehicle of development. For this, it may be useful to analyse the process of creative destruction from the viewpoint of this new environment.

**Entrepreneurship – the capability approach**

Entrepreneurs are part of work resources and a factor of production. As individuals operating in specific social settings, they have certain qualities at their disposal to help them reach their objectives in a more or less efficient manner. This process of activities is devoid of automation, even the most standard activities are characterised by individualism and are directly related to both the personal traits and the external conditions of the entrepreneur’s operation. Social aspects of entrepreneurship and of its main subject – the entrepreneur – are addressed by the interdisciplinary concept referred to as the capability approach. This concept represents a normative characterisation of social conditions that define a satisfying existence and welfare based on the principal freedom of operation.
Amartya Sen, in his critical evaluation of the 1980s economic systems in Latin America, emphasised the need for adopting a more ethical approach to the problem of welfare creation and conditions that determine the process. His early conceptual draft of the capability approach (Sen, 1984, 1985, 1999) was developed in the 1990s to the form of a normative theoretical construct that can be adopted in many areas of scientific and analytical research. The concept itself is not without flaws, as Sen insists on placing strong emphasis on such ideals as justice and freedom. In modern business practice, situations occur in a wider context, under more complex operating and social conditions. Therefore, they cannot be reduced solely to the ideas of freedom and justice. However, the concept proved appealing, and this apparent gap has already been addressed by many authors.

The use of the capability approach in Sen’s analysis (2000) made it possible to extend this concept to embrace macroeconomic analyses of capital accumulation (physical, technological, immaterial, human, and public) in the context of maintaining a socially just path of economic development. As such, the capability approach provided a broad conceptual and methodological framework for multidimensional analyses of sustainable development. It also enriched the scientific potential of studies and analyses of entrepreneur strategies and mergers of companies (Ahn, Mortara, Minshall, 2013; Robeyns, 2005; Deneulin, Stewart, 2002).

In his analysis of differences in the use of economic development potential across countries, (Abramovitz 1986, 1994) employed a concept of social capability. This term represents the capability to make good use of not only personal skills and attributes developed by individuals, but also their social skills. The main factors shaping our social competences include: general level of education, experience in organisation management (and large organisations in particular), levels of financial resources available to companies, stability of the legal system and the level of institutional and governmental support for economic development.

Despite some obvious differences between nations and companies, both levels of organisation can be seen as operating through elaborate systems of management. In addition, those systems interact with and influence one another – a deciding factor in creation and distribution of gross domestic product and economic development (Fagerberg, Srholec, 2015). Expanding on the notion of social capability, Aiginger, Barenthaler-Sieber, Vogel (2013) identified five categories that define a nation-level capability for structural changes and successful socio-economic development, namely: innovations, education, productivity-increasing elements of social security, institutions, and pro-environmental awareness. If a nation holds competitive advantage on export markets, it
means that it has been able to cumulate specific capabilities of their human and physical capital, legal system, and institutions. Development of new capabilities – be it state support for innovation, quality of management, efficient political system or general openness of the economy – is a prolonged process, shaped by various configurations of historical, economic, social and political determinants. It is worth noting that systems of innovation and management are of particular importance in the economic development of nations.

While past analyses sought to explain differences in national income and productivity on the basis of demographic changes and historical levels of capital accumulation, today’s research seems to emphasise knowledge as the most decisive factor of economic development. A knowledge-based economy must be rooted in capabilities of social entities to pursue, absorb and utilise knowledge. Of all types of entities operating on global market, it is the enterprises that play the most fundamental role in terms of knowledge generation, absorption and utilisation.

**Institutional determinants of entrepreneurship on national and regional level**

Policy of entrepreneurship is a segment of national economic policy introduced on several levels, with the most important level corresponding to the formulation of general conditions for economic stabilisation and growth, as an important factor stimulating the spirit of entrepreneurship in companies. Other levels of note here include national fiscal policies and regulations related to various areas of company operation, particularly those that stimulate innovation and those that support global competitive advantage of domestic companies. For those measures to be effective, however, they must be based on proper institutional support.

Economic involvement of economic entities and their dynamics play an important role in the formulation of national strategies of economic development. This applies, in particular, to those agents which are directly involved in the operation of regional centres for innovation: state authorities, local governments, EU agencies and structures, research organisations. Regional policies of innovation, in tandem with the aforementioned regional-level organisations operating in the sectors of education and technology, play a fundamental role in securing long-term survival for local companies and maintaining stable economic growth in the region (OECD, 2011).
Reflections on various aspects of regional-level economic development have led to formulation of the concept of regional innovation systems. There are various approaches to the understanding of this concept; it can be defined as a grouping of inter-related entities exerting strong impact on innovation dynamics through their activities. The system is designed to embrace internal organisation of companies, relations between companies, and the placement of the public sector, public policies and financial institutions in practical realization of innovative objectives. At a regional level, the constitution of these elements may vary to a large extent.

Analysis of conditions for regional-level innovation comprises three levels – interactions between actors of the innovation system related to the exchange of knowledge, the role of institutions supporting the transfer of knowledge and innovations, and the involvement of the innovation system in practical formulation of innovation policies (Schrempf, Kaplan, Schroeder, 2013).

In practice, innovation is generated by groupings of companies that display a tendency to form clusters. In particular, this applies knowledge industry. The state plays a leading role in stimulating innovation. It offers support for cluster formation in hi-tech sectors, such as ICT, materials science, biotechnology. Innovation systems at both levels – national and regional – are interlinked. Public structures at national and regional level regulate the mechanisms of integration between such actors as institutions of higher learning, privately owned companies and laboratories that offer their innovative products or services within the structure of their cluster or outside of it, or even products distributed on national or global level. In addition, innovation systems offer facilitated access to material, human and financial resources required for the implementation of innovations. Creation and solidification of regional innovation systems as a way to improve the region’s competitive advantages has already become a political priority in many strategies of regional economic development (Doloreux, 2005).

Globalisation trends also gain importance as factors of impact upon the development of innovation processes at regional and national levels. The forces of globalisation have the power to integrate, hierarchize or exclude whole regions. The role of public institutions is to provide political, social, legal and fiscal conditions that favour the spread of innovation and market openness. Their ability to induce technological and managerial changes and adjustments plays a key role in maintaining cohesiveness and efficiency of regional innovation systems.

The whole framework of activities undertaken at all levels of social and economic operation is designed to stimulate company dynamics with the ultimate goal of improving local conditions for economic development. Professional literature provides a wealth of analyses related to this segment of entrepre-
neurship science, aptly summarised by Agion (2017), (MacMillan, McGrath, 2006) as corresponding with Schumpeter’s view of an entrepreneur as a creative destructor employing innovation to overcome the restraints of the existing order and thus serving as a vehicle of economic development and growth. Innovations have the power to affect institutions and economic policies and force them to adapt to new conditions. Old technologies are replaced by new solutions, forming new conditions for economic development. Their results may vary in terms of social consequences, capabilities for technological advancement and opening of new paths of development, but they can also add to stagnation if the region or nation find itself unable to properly absorb the new technology and reach a new level of development.

**Conclusions**

This sum of reflections on selected aspects of entrepreneurship is meant to emphasise the importance of this phenomenon in the rapidly changing modern world. The lasting appeal of many concepts used to describe the various forms of entrepreneurial activities seems to attest to the need for further exploration of not only the nature of entrepreneurship, but also of practical methods that may be viably adopted in an economic setting. Of the many analyses of entrepreneurship, the most dominant trend seems to follow Schumpeter’s view of innovation activities as fundamental not only for economic development, but also of advances in many other areas associated with the broadly defined social welfare. Processes observed presently in modern economy are characterised by dynamics quite unmatched in history. Major determinants of economic growth are also subject to rapid changes. The capability for effective utilisation of the existing factors and for making equally good use of new possibilities for growth depends, primarily, on creative approach of individual managers. The capability approach concept seems to provide good potential for valid analyses this particular aspect of economic operation. It has already been adopted and expanded upon by several expert teams involved in the study of competitive capabilities of companies and nations under the changed conditions of the modern disruptive economy.
References


The role of the Network Process for improving efficiency in 21st century organizations

Abstract: For the last 20 years, the world economy has evolved at great speed. Every good, capital asset, knowledge is mobile and leads to increased competition. The knowledge economy induces more cooperation. In such a world, the power of organizations and countries decreases because of rising interdependencies. It is therefore important to understand why the meso level, represented by the network process, may be becoming the right level at which action is appropriate. This paper explains how the network process is powerful enough to co-build the long run innovative strategies and the short run competitiveness. The network process authorizes the interactions between all stake holders within the organization and with the external environment and the institutions of each country. From a theoretical point of view, the paper uses different analytical approaches in complexity, psychology, economics and management to analyze in depth the concept of “network process”. To analyze the role of the network process, the paper uses complexity approaches to account for inter-dependences between cooperation and competition, used for building an efficient organization which will be more or less than the sum of their parts. First, the paper analyzes how recent changes in the 21st century require the use of complexity approaches for discerning network processes within organizations. Second, the study proposes new long run and short run strategies using a network process for increasing efficiency in the global economy. In the last part, the paper proposes an analysis of the new leadership using a network process for long run innovation and short run selling on the world markets.

Key words: Network process, interactions, innovation, information competitiveness, transformational leadership

JEL Classification Code: F40, L14, L16

For twenty years, the world economy is experiencing a paradoxical situation. On one hand, every good, capital asset, knowledge is mobile and global. On the other hand, the network process becomes an appropriate level at which action is required in order to succeed in innovating in the global economy. In this paradoxical situation, the power of each organization decreases due to the interdependences between organizations, institutions and the environment, and the power of countries; decreases because of world globalization. The paper proposes to define what the effective level for the organization is for taking action in the 21st century. The “meso level”, represented by a network process, seems to be the appropriate level to innovate and sell in a global economy. The study seeks to explain why a network process within an organization is power-
ful enough to build innovation and competitive strategies in a world knowledge economy. From a theoretical point of view, the papers uses several theoretical approaches in economics, management, psychology and complexity in order to analyze the concept of “network” and “interactions” created by the complexity approach (Morin, 1981, le Moigne, 1995). The paper shows how the network process creates feedback within organizations between all stake holders (entrepreneurships, employees, institutions and environment). This dynamic feedback induces innovation in the world Knowledge economy. The network process represents a meso level which permits higher degrees of liberty for all the organizations within the world knowledge economy. The network process has thus more power than any lone country in the world (and the world institutions as the European Union) because network process is flexible and can quickly adapt to world changes. One of the main characteristics of this meso level is the continuous phenomena of “network” co-building able to reach quantitative (as wealth and employment) and qualitative (as well-being and social efficiency) objectives.

To analyze the functioning of the network process, the paper uses both the “French school of proximity” (Rallet & Torre, 2005, Pecqueur & Zimmermann, 2004, Vincente, 2002) and the complexity approach (Morin, 1981; Atlan, 1979, Le Moigne, 1995) to analyze and formalize the feedback existing between opposite factors able to create higher efficiency within the organization. The complexity approach uses an inclusive methodology which keeps all the parts of the contraction for defining effective economic and social ways to produce and consume. This study also mobilizes an interdisciplinary approach about the network’s process which is founded on philosophy, sociology, and economics (Brown & Duguid, 1991; Cohendet & al, 2000, Muldoon, 2013). One of the central questions in the Knowledge economy is to succeed in analyzing how the network process manages cooperation and competition relationships for innovating and selling products on the world markets. In the first part, the paper analyzes how the recent world changes evolve to use a complexity theory for discerning a new role of the network process that can be used in the long run and short run strategies. In the network process, each organization combines opposing factors, such as openness and closeness, creating a flexibility large enough to be able to adapt to world changes and stable enough to provide a trustful environment for employees who belong to the network process. In the second part, the paper defines new innovation and new selling strategies for using a network process efficiently. In the last section, the paper shows how these new long run and short run strategies using network process involve new kinds of leadership which combines long run innovations with short run competitiveness.
I. The world knowledge economy induces a network process which promotes innovation and competitiveness for 21st century organizations

1) The network process permits action in the paradoxical situations of the 21 century

For the last twenty years, the world economy has evolved at great speed. On the one hand, every good, capital asset, knowledge is today mobile and induces an increasing competition among all the agents of the world. And, the rising weight of financial markets (conducted by deregulation since 1990) has also induced the predominance of a short run view in the innovation strategies of organizations. However, on the other hand, the emergence of the Knowledge Economy induces more cooperation with the “Division of Cognitive Labor process” (DCL). In a world Knowledge economy, innovation becomes a collective process and the relationships between individuals become as important as each inventive component (Nelson and Winter, 1995; Foray and Lundvall, 1996, Petit, 1999). These recent changes of the world economy induce therefore a contradictory movement between competition and cooperation among all the agents (individuals, organizations and countries). The Division of Cognitive Labor is thus very different from the “International Division of Industrial Labor”, which was dominant during the eighties, and where transnational firms could freely choose to implant their activities (in research, raw material production, goods production or sell) in different countries (Table 1). The role of the New Industrialized Countries (N.I.C.) on the world markets continuously increased during the 2000’s and they are now competing against advanced countries in goods and services with high technology. In order to adapt to this new economic regime, based on the definition of sustainable competitive advantages, organizations have now to build their long run strategies on their “whole value chain” (Porter, 1990) and, therefore, use a network process to interlink opposite factors which coexist in the world knowledge economy (Aghion & al, 2005). The innovative strategies of the organizations, based on knowledge, are now based on network processes. This process is efficient because the “whole is always more than the sum of the parts” (Davenport and Prusal, 1997, Foray and Lundvall, 1996). With a network process, all organizations can be both open and closed (Carrincazeaux, Coris & Lung 2008, Cohendet & al, 2000). The network process also gives individuals, working in organizations in the 21st century, both more freedom and more constraints (Rutherford, 2009). The main point is that each organization has to co-build with their partners (employees, trade-unions,
financing institutions, citizens…) so that this network process can create a stakeholder governance (and not only stockholder governance). In using a network process, all the partners may manage and control one part of their destiny. They can innovate in the long run because the network process creates a few rules or routines which in return help them to take risks in an evolving world.

**Tab. 1. Impact of the world changes on the organization of the 21st century**

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<td>Hierarchic Leader</td>
<td>Transactional Leader</td>
<td>Transformational Leaders</td>
</tr>
</tbody>
</table>

*Source: Ricardo, 1815, Helpman and Krugman, 1985; Porter, 1990, Drucker, 2011*

2) Building a meso level using a network process helps organizations to be more efficient

As the world knowledge economy is complex, it is important to develop an inclusive approach for helping people (managers, employees and stakeholders …) to think global and act local. The recent world changes profoundly modify the previous regulations of the world economy. The invisible hand of markets and the visible hand of the State-Nations now fail to adapt to individuals, organizations, and to the new challenges of the 21st century’s economy. The meso level is today more efficient than both the micro level (which becomes less powerful because of the globalization) and the macro level (which also becomes
less powerful with the decreasing power of State-Nations). In the studies of the evolutionary theory (Perroux, 1961, Polanyi, [1944] 1983; and Hirschman, 1980, Nelson and Winter, 1985), the meso level authorizes dynamic interdependences between markets, organizations, and the environment.

To analyze profoundly how this meso level works, it is interesting to use the complexity approach that was developed in the seventies (Koestler, 1968, Morin, 1977, Altan, 1979). With the knowledge economy, the complexity approach is seeing a kind of rebirth with the works of the “systemic approach” (as Le Moigne, 1990) and those on the “proximity approach” (as Cohendet & al, 2000 or Carrincazeaux & al, 2008) (Figure 1). Indeed, this meso level, which is co-built by all agents within the organization, clearly highlights the qualitative inter-dependences that link the order factors (as organization) to the complexity factors (as innovation). The complexity approach connects individuals all the way through via dynamic mechanisms that are based on qualitative relations. In such a dynamic, the network process thus becomes the best organization to efficiency innovate today.

![Complexity Approaches to design new organization for the 21 century](image)

Fig. 1. The Complexity Approaches to design new organization for the 21 century

Analyzing the systemic feedbacks that exist between innovation strengths and organization strengths, the meso levels can be more powerful than the macro levels and the micro-levels. These meso levels are created by all the individuals within organizations. According to Koestler (1968) and Atlan (1979), these levels are able to stabilize their behavior by producing “regularities from disorder” (organization) and “complexity from disorder” (innovation). With the Information and Communication Technology Revolution (based on the “com-
munities of practice” and the “social networks”), others academic authors from other academic fields in Economics and management (like Coriat and Weinstein 2010, Lacour and Lung. 2003, Teece, 2012) use the systemic approach in order to explain the flexibility of the meso level. They demonstrate how this meso level helps agents to adapt their strategies to the 21st century’s economy. With a network process, it is possible to study a new paradigm based on an inclusive economy where the opposing relationships can be conceptualized (innovation and organization, emotion and rationality, cooperation and competition) in order to increase the efficiency of long run and short run strategies (Kahneman, 2011). Using the complexity approach, the network process is sufficiently open in order to innovate and sufficiently close on itself to produce efficient organization despite the “path dependency” of each organization.

II. New innovation strategies and new run competitive strategies for the 21st century

1. The network process induces new long run innovative stratgies within the organizations

   In this part, the paper shows how the network process creates long run sustainable competitive advantages for all organizations. With the globalization and the market finances being based more and more on stock markets, most companies are no longer allowed to build long run strategies. However, the paper shows that the long run horizon is essential for organizations to efficiency compete on the world markets. The world division of labor among countries has profoundly changed in the last twenties years. The optimal long run specialization proposed by authors in the nineties in international economy (Ricardo [1817], 1977) did not work because the labor division is no more based on a clear opposition between a primary way of thinking (the long run specialization) and secondary a way of acting (the short run competitiveness). All organizations must today take into account their external and internal competitors, even the “non-price specialization” theory, formulated by Krugman and Helpman in 1985, is not sufficient to explain how organization build new innovative strategies. One of the main reasons which explain this uncertainly for organizations and countries is the rapid increase of emerging countries (as China, India, Brazil) in the world economy. Emerging countries now compete with advanced countries on high technology goods exports. All companies in all countries must thus learn a new way of thinking the long run and a new way of acting in short run.
To define this new way of thinking more precisely, the paper proposes to enlarge the concept of sustainable competitive advantage proposed by Mickael Porter during the eighties. Porter stresses the utility of a company to specialize in the “whole value chain”, and not just at the top of the chain (goods in quality and in variety). For Porter, the differentiation of goods made by each company may be efficient; not only on the upper side of the chain (as in Helpman and Krugman’s theory), but also in the middle (new labor organization) and the low side (new way to sell product with low price) (Baulant, 2015, 2017). In the present study, we enlarge the concept of “differentiation” (same technology and differentiation along the whole chain) into the concept of “diversity” (different ways of thinking and to combine supply and demand factors). With differentiation, the technology and the qualification are still the same and the innovation only deals with quality or variety of each good. With “diversity”, it is possible to analyze different opportunities for the innovation of new goods and services not only by radical innovation but also through market innovation, or frugal innovation. The main aim of market innovation or frugal innovation is to take into account the “real needs” of the consumers on particular markets. A dynamic approach, linking supply and demand is thus able to mix the diversity of goods and the proximity of consumers. The “competitive advantages” diamond is today based on the “diversity” of four factors: supply and demand, cooperation and competition (Figure 2).

Fig. 2. A Network process permits a co-building of the Sustainable Competitive Advantages in each company
The concept of “diversity” is powerful enough to take into account different kinds of innovation and all organizations. With the network process, it is possible to become pro-active in the world knowledge economy. People within organizations may become “stakeholders” and build innovative strategies for themselves, without staying passive or suffering from world evolutions. With the differentiation concept of Krugman, global companies were always in advance in the innovation process. With the diversity concept, all kinds of organizations may be able to build long run innovative strategies.

Porter’s analysis stressed on the differentiation of goods from demand along the whole chain value. In the present paper, goods may also be different. Applied to the territorial analysis, specific food goods (for example the AOC\(^1\)) may be produced in specific territorial conditions and they now could have a good competition position compared to world goods produced with standardization despite their higher prices. The higher prices of local goods with an AOC label take into account the higher quality of these goods with the respect to the environment.

Moreover, the concept of “diversity” used in a network process may concern all the factors of the competitive advantages diamond. From the supply side, Porter only stressed the role of “built supply factors”, in research and development and human capital. In his analysis, Porter considered that it was easy for companies to import simple factors (such as labor, raw materials or equipment) if they are locally too expensive. However, in our analysis, we also take into account the diversity of supply factors: all kinds of innovations (radical, market or frugal innovation) and all kinds of human capital (using codified knowledge, tacit knowledge or competencies) may be introduced in the network process. Integrating all kinds of diversity in the network process inexpensively is now possible thanks to the digital revolution. During the eighties and the nineties, it was only possible to differentiate one single good produced with one efficient technology (from the Taylor’s principle). Today, the “frugal innovations” is rising, not only in developing countries (as the «Gobi hippo water roller»\(^2\)), but also in advanced countries (as the development of Fab-Lab processes, communities of practice, shared consumption…). It is possible to produce

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\(^1\) With the “AOC” (Appellation d’Origine Contrôlée), the consumer knows that he is buying a local product which respects the environment and is produced in a specific way.

\(^2\) The «Gobi hippo water roller» is a water roller (with a hippopotamus’ form) which was invented by two South African engineers, Pettie Petzer and Johan Jonker, in 1991 which is now used to carry water from the water source to people living in developing countries such as Namibia (http://hipporoller.org/).
diversities in using a network process which allow the inexpensive production, of many diversities in goods and services.

From the cooperation side, Porter stressed on the high efficiency of cluster organizations which were able to reach internal and external scale economies. In the 21st century economy, it is now possible to take into account all the other ways in which to cooperate through friendship, partnership, communities of practice, organic networks, local or territorial organizations.

Finally, the competition factors introduce three different kinds of competitiveness: the price competitiveness, the non-price competitiveness and the information competitiveness. On this last point, showing the diversity of competition relationships, organizations therefore need to think about their behaviors from the inside and outside and from long run and short run considerations. From a short run point of view; competition strengths are more important than cooperation strengths as we will analyze in the next section.

2. The network process creates a rising information competitiveness for companies and organizations

In the short run, it is important to study how network processes may transform long run innovations into efficient selling on world markets. In a 21st century economy, for efficiency acting in short run, it is not sufficient to only adapt more and more quickly. The old formula: “catch the right information at the right moment” does not explain how organizations may increase their competitiveness. With globalization, competition changes of nature and concern today price competitiveness, non price competitiveness and information competitiveness. Most of the time, simple competition strategies drive organizations into “vicious cycles” (losses of all the competitors due to economic price wars), very bad “path dependencies” or “hysteresis factors”. In order to solve these vicious circles, it is thus important to understand how an organization may increase their short run competitiveness on the world market. All the organizations in the world knowledge economy are able to use profitably the economic, social, financial, political, technological, cultural, environmental interdependencies. Using the network process for acting (specially using social networks) may give a high degree of liberty to an organization, by giving them the power to act in a tangible manner. The “five strengths model” of Porter (1990), which links organizations to their suppliers, their customers, the opportunity for new invention, and the presence of new competitors for the same goods, has to be enlarged with knowledge economy factors. The short run competitiveness has to take into account the power of all the stakeholders (employee unions, stock
holders, environment activists, think tanks, lobbying activities, and institutional regulators) in different fields of the world economy (politic, economic, technology, cultural, financial, territorial organization …) and at every level (local, regional, national, and international, transnational).

On the world global markets nowadays, firms have to manage three kinds of competitiveness in an original, coherency, and efficient manner. The “price competitiveness” is based on the change in exchange rates, the profit of organizations, wages for workers, tax on labor, and the productivity rate increase. The “non-price competitiveness” defined by Helpman and Krugman (1985) is founded on quality and variety differentiation but also on the price differentiation, the power of duopoly, oligopoly and monopoly competition. Modern economy’s short run competitiveness is information competitiveness. The information competitiveness, analyzed by C Baulant (2015, 2017) is a new form of competitiveness which involves the network process between working with network, using positive influence within networks and the key protection of the immaterial patrimony and competencies. The information competitiveness is more and more present these days because of the increasing effects of the Information and Communication Technologies Revolution. Since 2000, false information (“fake news”) may today destroy the reputation of all kinds of organizations even if the competitiveness of these organizations and the quality of their goods is irrefutable. This means that the competitiveness of the organizations has to be “pro-active” and organizations must use competitive intelligence on the world markets. Competitive intelligence practices come from the USA and “weak signals” were analyzed by US companies on the world markets during the sixties (Wilensky 1967, Ansoff, 1975). Competitive intelligence came back into being at the end of the cold war in 1990 when the “military war” has been transformed into an “economic and a knowledge war” (Aghion et al, 2005, Baumard, 2012, Harbulot, 2014). The methodology of competitive intelligence is based on the transformation of information into knowledge, then the transformation of knowledge into useful information (Davenport and Prusal, 1997, Guilhon and Levet, 2003, Baulant, 2015). The information competitiveness is profoundly different from the other kinds of competitiveness. On the one hand, the price competitiveness induces organizations to maintain low prices for increased market shares. On the other hand, the non-price competitiveness induces organizations to develop oligopolistic positions in order to become “price makers” on the world markets. In these two kinds of competitiveness, we can observe very few winners and a lot of losers.
In order to increase their information competitiveness, organizations, in order to become proactive in the short run on the world markets, may use competitive intelligence methodologies based on the network process (Figure 3). On first side of the information competitiveness, in developing “sharing networks” may help organizations to initiate, in the short run, a “learning by sharing” process within the organization and among all the stake holders. On the second side of the information competitiveness, the organization may build some “lobbying networks” in order to persuade their partners and their consumers that their goods and services promote good health and increase the wealth of the consumers and citizens. If the companies take action in the name of consumer health and the environment, they must communicate this to consumers. It is what we call “positive lobbying”, contrary to international companies, who don’t care about the long run health of their consumers (such as Coca Cola for example) and they just practice important “negative lobbying” founded on marketing technologies and sensorial marketing (good smelling, images of freedom and so on) in order to “hook” consumers on to their products. And, on the third point of the information competitiveness triangle, companies may co-build “institutional networks” imposing social norms and good practices in order to protect their immaterial knowledge. The institutional networks may be of a different nature. They could be organized in “clusters” or “districts” which both gather companies, universities, capital risk, and local organizations together in order to reach a higher efficiency in local areas. They also could be local or regional institutions which help companies to deposit patents for their innovations. They could also help companies to find investors (public venture capitalists or internet crowd-founding) for their innovation. Lastly, they could help companies to improve their internet network in order to inform consumers and citizens all around the world. So, the territorial institutional networks, such as regional councils, thus actively help companies to sell on local and global markets. These institutional networks may inform all the companies about the new changes in international norms or laws. Therefore, even if local companies are too small to fight against the new law, they can adapt themselves with time before the new law affects them and induces a loss in market shares.
III. New leadership adapted to the network process in 21st century organizations

The world changes have involved new strategies both based on network process within the organizations. To participate in the world competition, this new network process has to resolve a new kind of internal and external management. The hierarchic management is no longer adapted to the new economy and companies have to co-build their own network management. As the network management has to become more flexible with the division of cognitive labor, the problem is therefore to manage the “strategic points” in each network. In this new management creates a coordination process, larger than the cooperation processes. In cooperation relationships, the main problem is finding a common language in order to exchange with people participating in the network. In coordination process the main problem is acting together with people who can still express some divergent views about how to reach the common strategy defined within the network. So everyone has to coordinate with others within the network process all the time, even if these people are not considered as necessary in the cooperation relationship. One of the advantages of the complexity approach is knowing how to organize the diversity of point of views expressed by all the partners within the coordination relationships. In the long run, different innovative strategies are thus possible with cooperation (learn-
ing by sharing) or competition (learning by confronting). In the short run, different competitive strategies are also possible through cooperation (“acting by sharing”, “Fab lab”, sharing consumption…) or through competition (“acting by confronting” in using soft power and influence policies).

Flexible network processes help people to adapt to others and to new environments. As the network process is based on an “organized” proximity and not just geographical proximity, it is necessary to build relationships of confidence. This kind of network based on capabilities and confidence (the communities of practice for example) are able to crystallize this spirit of confidence among people without having to rebuild new cooperation relationships each day. So according to the complexity approach, the network process is able to create an alchemy by mixing both people’s rationality and emotion, codified knowledge and tacit knowledge in order to create new strategies. Furthermore, in the network process, appears what Atlan (1979) calls “emergence proprieties” which are able to transform disorder into complexity and weaknesses into strengths.

1) Knowledge economy and new leadership: the emergence of a “transformational leader”

With the globalization and knowledge revolution (table 1), the management of organizations had historically moved from the “geographical proximity” (based on the State Nations) towards a “thematic proximity” (based on the global firms). In the 21 century, organizations have to think global and to act local. So the proximity of organizations will move toward an “organized proximity” (Rallet and Torre, 2005) in order to co-build organizational rules for all the members. For designing the long run innovation strategies and managing the short run competitiveness, all organizations must invent their own “organized proximity”, a concept defined by Rallet and Torre in 2005 as “the capacity to encourage individuals to interact”. The organized proximity, building by the network process, thus helps individuals to work together, but which also constraints them (Rutherford, 2010). Leadership within a network process has thus to be rethought in order to create an “organized proximity”. Different academic research in sociology and management (Avolio and Bass (1991), Brown & Duguid, 2000) explain the transformation of a “hierarchic leader” (the “top down” logic) toward a “transactional leader” able offer rewards to individuals who increase their efficiency. Since 1990, the “transactional leader” must also move toward a “transformational leader” (Karaszewski & Lis, 2013). The transformational leader accepts to co-build collective strategies where all the issues are first discussed by all the partners belonging to the network (Kotter, 2007).
Most of the studies on leadership had already pointed out all the factors for becoming a transformational leader. A good leader must have intelligence capacities, imaginative power, be able to translate good ideas into tangible plans and be able to foster the engagements of all his team… These descriptions about the ideal leader are no longer useful today because it is impossible to “copy” the strategy of a good leader. Moreover, one of the best teams of MIT, working in management, communication and psychology, had concludes that the “ideal leader is just a myth” (Ancona and al, 2011). No single person can indeed possibly live up to all of these qualities. In the economy of the 21st century, it is important to enter into a new paradigm which will be in relation to the knowledge economy. It is the end of the “myth of the complete leader”. New leaders no longer try to manage everything and everyone. In a complex economy, a leader has to replace their “command” action with a “cultivated” action and replace the “control” with “coordination” of network member actions. When leaders “come to see themselves as incomplete, as having both strengths and weaknesses, they will be able to make up for their mining skills by relying on others”. (Ancona and al, 2011: 180). In the division of cognitive labor, the innovation process occurs if each member of the network process cultivates his own initiative and responsibility and proposes his own ideas (Foray and Lundval, 1996, Mulddon, 2013). We thus enter into the “stake holders” paradigm where, as knowledge is more disperse, a network process is necessary to give them sense. This new network process induces more learning by sharing process (Pohontu, Baulant, Rusu, 2012). Social networks, such as facebook or twitter, may be used to share and coordinate the actions of their members. Being able to understand this cognitive approach which links organization strengths to innovation strengths is the new role of the transformational leader who has to design a global result which would be more than the sum of the partners belonging to the network. A network process is therefore more than “alchemy” because leaders and followers have to learn to work together. It is more than a knowledge puzzle to settle. Catching “the right information at the right moment” is no longer appropriate in a 21st century economy. The leader must transform, with the help of this team, monitoring information into new knowledge and then translate this knowledge into new useful information understandable by all the members of the team. The network process gives power to individuals because they are able to coordinate their action within a network and centralizing information is made easy with modern big data processing. However, allowing multiple people around the world access to information is more difficult. In both cases, the ever-growing network process is useful within and beyond all the people over the world.
Founded on the “emotional intelligence” analysis, Daniel Goleman (2011) develops the role of this new transformational leadership. He highlights the intrinsic qualities of emotional intelligence which are required in order to become an effective transformational leader. In this approach, the first characteristic for a leader is to be able to develop his self-awareness. The transformational leader has to know: his qualities, his defaults, his control and his non-control. Knowing himself is required to succeed in identifying his values and goals, and recognize how feelings could affect him and others within his team. The transformational leader has to be realistic, honest with himself and others and admit his own short-comings. The second characteristic for a transformational leader is “self-regulation”. This quality is important in a 21st century economy because the leader must be able to think in the long run in order to efficiency act in the short run. He has to listen to the members of his team and his partners, to seek out information to understand the problem, to analyze before judging any failure, and carefully choose his words when he speaks to his team. In such a way, he could manage his team with “ambiguity” which is one of the key points of the complexity approach. Granovotter (1973) highlights the “weak tie” role played by the transformational leader in the network process. The second characteristic for a transformational leader is “self-motivation” which gives him optimistic feelings. This motivation comes from within himself due to a loves of the job and a love of learning from new approaches. He also likes the well done job and the transformational leader knows how to be persistent with his questions until he understands.

All these qualities for a good transformational leader involve a new way of thinking and acting in a world knowledge economy. This new kind of leadership is adapted to the modern world where everyone has to learn to work both independently but also as a team. This analysis of the transformational leader involves a new paradigm in the economic approach in which individuals have to mobilize rationality and emotion (Simon, 1955, Gigerenzer, 2000, Kahneman, 2011) to adapt themselves to the changing environment. In the 21st century economy, the transformational leader will be able to use the two parts of his brain (emotion and reason) to co-build long run innovation and co-manage short run competitiveness.
2) Two news leaderships in organizations: think slow and fast

Based on the analysis of the transformational leadership adapted to the world knowledge economy, we now propose two kinds of leader to manage the innovative and competitiveness strategies within the network firms. The “economic leader” has to conduct the long run innovative strategy and the “go-between leader” has to manage the short term “useful information” given to actors at the right moment. In these two categories of leader, the paper seeks to identify the “minimal” factors which are involved to define effective thinking and acting in a world economy. These categories of leadership are derived from the empirical works we made in studying “cluster organizations” in different countries (Baulant, 2007, Amisse et al, 2008). In these studies, we show that the “economic leader” is more important in high intensive research clusters (as the Silicon Valley) based on cognitive proximity and the “go-between leader” is more important for the intensive employment clusters (such as the Italian districts) based on the geographical proximity. Based on the transformational leader, the characteristics of the economic leader and the go-between leader are, in both cases, far removed from the characteristics of the “hierarchical leaders” of the sixties or seventies. Economic and go between leaders are based on the “organizational proximity” analysis proposed by Rallet and Torre (2005). To get different people to work together within a network, the role of the “go-between leader” is complementary to the role of the “economic leader”\(^3\). Both of these leaders have to get all the members of the networks working together which is why the “organized proximity” is more important for a network organization than the “geographical proximity” or the “cognitive proximity”. Applied to the cluster organization, we can go further in the analysis. The role of the economic leader will be more important in codified cluster and the role of the go-between leader will be more important in a tacit cluster. The “economic leader” has to build organized proximity in codified networks by using the ability of the individuals to define new norms together that they will then respect. The “go-between leader” also has to build organized proximity in tacit networks by using the ability of the individuals to share the same frame of mind (Rallet and Torre, 2005). To keep networks active, the go-between has to be pro-active in using the pre-choice of Kahneman’s approach (2011) and Dolan (2014) and the “nudge” of Thaler & Sunstein’s analysis (2010) in order to help people to communicate and cooperate.

\(^3\) For Muldoon (2013), all kinds of leaders are in the knowledge economy “hill-climbers on an unknown landscape”. The “Maverick leaders” (our “economic leader”) have to “discover new land” and the “Follower leader” (our “go between leader”) has to explore in detail this new land.
An economic leader able to conduct the innovation process

Three qualities can qualify the role of “economic leader” within a network firm (Figure 4).

First, the economic leader has to be a “visionary” and be able to see into the 30 years’ horizon. As analyzed by Ancona, Malone, Orlikoski and Senge (2011), the economic leader has to propose to his team and the civil society a compelling image of the future. In the long run horizon, the economic leader has to develop within his network, rational analysis and motivations of the actors that he has imaged, in order to innovate new goods and services. During this period, the economic leader has to create good conditions for cooperation confidence in order to stimulate the innovation process. The leader has to be prepared to conduct his new innovation with no budget, which is very important in a zero economic growth period. Moreover, the leader, who works for a long run horizon, has to build his network a long time before he can use it and ask to the members of his network to become active. The management of the economic leader also has to stimulate the creativity of all team members in order to be innovative. The rising economic scales obtained with the economic leader are larger because the innovation process becomes therefore collective and cumulative. Second characteristic, the “economic leader” has to be able to reinforce the cooperation relationships during the innovation process in using his social skills. To co-build a cumulative innovation process, the “economic leader” has thus to be sure that all the members of his network would obtain a real advantage (monetary and qualitative) by cooperating from their own motivation in
the network. In such a configuration, all the stake holders who are involved in the network firm are looking to cooperate for co-building a new strategy which will be useful for them. Therefore they will not be tempted to adopt a “free rider” attitude. In such a situation, the economic leader doesn’t have to monitor all of his partner’s actions because he trusts them and because his partners know that the result of the co-building innovative strategy will be shared with all network members. As the members of the networks feel at the same time linked and independent, they are motivated to co-build the collective strategy.

To be sure that all the members of this team want to cooperate in the network organization, the economic leader has to be able to develop “social skill” with the members of his team, but not friendship. On this point, social skills is a way of management team technique which uses “friendliness in order to move the people in the direction he wants” (Goleman, 2011: 19). The economic leader thus uses rational argumentation and emotional feelings to persuade all the members of his network to work in innovative direction. This process is close to the positive lobbying and close to the economic intelligence approach who both use network organization and network direction. Building networks in advance is thus crucial for a good economic leader, which he must know how to use when the time for acting arrives. Because of the rising knowledge economy, the economic leader knows that nothing important could be done alone. The economic leader has therefore to drive the members of his team to find their own solutions. When the invention becomes collective, the network organization always induces rising scale economies. The passion that the leader has for his work can be a good stimulus for the members of his team. For this reason, it is really impossible to copy an economic leader who has succeeded in a specific network. Third, the economic leader has to accept to work with uncertainly. He has to accept to fail and always get back up. With this third characteristic, the leader will be able to transform his weakness into opportunities (Porter, 2011).

Using the complexity approach, Collins (2011) shows that the economic leader uses his strengths to accept the knock backs and to “get up” after a difficult situation by knowing how to mix opposite factors: “bred and born” and “mirror and window”. Depending on the “bred effect”, a good economic leader will be modest, he will just “try to be qualified for the job” during his life and he will know how to choose the right person for his own succession. Depending on the “born effect”, when the economic leader goes to work, his determination will stay intact and will always over-power him in such a way he is born to be a leader. According to the “mirror and window” effects, the company’s failures are always said to be caused by the economic leader’s faults (such as a mirror)
while the company’s successes are always explained by luck (as a window). The role of economic leader also remains temporary (like the role of the “capital risk angels” who finance innovative start-ups). Collins insists on the fact that a “good economic leader”, what he calls the “five level leader”, has to know how to choose his successor. Also the innovative process can be said to be fully successful when it goes on without the help the economic leader. His main aim is to let the other members of his team continue a good day to day functioning and free himself to concentrate on further innovation. Within these three conditions, the “economic leader” gives an important degree of liberty to the member of his network in leaving them to be creative. It is of course possible to learn to become a good economic leader but it takes time, effort, and commitment before reaching a win-win situation for all network members.

A go-between leader able to organize the daily acting

The role of the “go-between leader”, similar to Crozier’s “gate keeper” (1977), is as important as the role of the economic leader, to act successfully with the network firm⁴. The go-between leader knows how to construct a kind of “alchemy” with the stake holders’ feedback where “the network as a whole would become greater than the sum of its parts”. The role of the go-between leader is possibly more complex (working the members of his team effectively) than the role of the economic leader (directing his team). In a short run horizon, at the time of acting, the go-between leader has to face the fact that competition relationships will become more important than the cooperation relationships in order to succeed on the world markets. So the direct and indirect competition (through internal and external networks) tends to become more and more difficult to deal with. When a leader acts in the short run, he has to defend his objectives solidly and propose some reasonable challenges for his team. Successes of the network in small objectives is in fact very important in the short run, as the go-between leader has to be especially attentive to the needs of their employees, their desire to belong to specific communities and the necessity for a hierarchical structure.

Three characteristics can define a good go-between leader (Figure 5).

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⁴ For the economic leader, the feedback from the members can be perhaps lower because the economic leader knows how to speak to his team so that they always choose the idea of the leader as the good idea.
First, the go-between leader has to know to be pragmatic. He should be able to translate the innovation of the economic leader into a solid business plan which will be applied in the short and middle run. He also has to be able to formulate “intermediary goals” which are useful for reaching the final goals imagined by the economic leader. The go between leader also has to manage his network’s day to day activities. As the network grows, the budget available to the go between leader will also increase, requiring him to fairly allocate it between all the members of his network. The go-between leader also has to manage all of his team’s views and be both tactful and firm. As most of the time the network’s funding comes from outside the network (from the financial institutions or from the local institutions), the go-between leader has thus an important role consisting of linking people from different cultures, people with different aims, and people with different ways of working. The go-between leader has to manage his network all the time because he supervises his team during all the network processes (innovative, producing and selling). In such conditions, the role of the go-between leader tends to increase as globalization increases because the competition between network firms tends to become more important in order to catch funding, necessary to develop innovations and productions within a network organization. In the competitive selling processes, the go between leader has to find effective partnerships between the different stake holders for producing and selling on different world markets. Inevitably, he has to manage conflicts and difficulties (financing, account, labor skill problems…) which can appear when the production and the selling processes begin. The role of the go between leader is to increase the scale economies inside and outside the network firm.
Today, with globalization, the management of the external scales economies is more complex than the management of the internal scales economies. The consequences on the firm organization and the employment and the quality of work within the firm are also more important and they have to be under control.

The second great quality of a good go-between leader is to empathize and communicate with the all the members of his network. Empathizing just a case of accepting all of his team’s demands or propositions rather it means speaking frankly (which requires a real interest in all of the team members and communication abilities) in difficult situations, giving information, and in treating each team member fairly. The members of a network do not need to be “protected”; they just need to be fairly “informed”. Empathy is different from a paternalistic management (like Ford’s management) which was common place at the beginning of the twentieth century. On the contrary, empathy comes from the leader’s true feelings which combines facts concerning the difficulty of a situation and his confidence in his team members that they will react in a best way possible when they are correctly informed (Goleman, 2011). In a knowledge economy, the go-between leader will develop empathy when he is able to work with all his stake holders, adapt his network quickly to the international changes, and retain talents in proposing to all the member of his team to “co-build” the strategy of the network. The go-between leader has also to settle any conflicts between members on a day to day basis. In the “cooperation” process, cooperation is in effect the best way in long run to reach new innovations in goods or services but when innovations are made; all the partners try to obtain the best return on investment which creates competition relationships between members.

The third quality of a good go-between leader is his continuous “adaption” in order to incorporate in the network strategy world evolution that can appear each day and all the “weak signals” that the members of his team can pick up during their work. Moreover, the go-between leader has to know how to use the “weak ties” of his network (Granovetter, 1973) and how to use the people of his team at the right moment and at the right level. When some of the partners of his network refuse to cooperate, the go-between has to settle compromises. Therefore the go between leader has to understand how people, with different aims and cultures, can cooperate together.

The role of go between leader has to be permanent. In a network firm for example, the go-between leader has to integrate more than the economic leader so he is able to develop social qualities in order to clearly and diplomatically discuss with all partners. With time, the role changes and could evolve in to “network broker” role in order to keep the network alive because the stimulation created by a new innovation fades with time. The go between leader has to make
regular innovations in commercial, advertising, and communication to keep the members’ attention and this continual innovation creates a consensus between partners who had fallen into conflict. Each month to find new partners to finance the activity of his network firm. On a yearly basis, he has to communicate on the global strategy of his network firm, in organizing for example interesting meetings, “learning by doing” sessions, and original ways of communicating on the Internet... for example. It is thus a full time job and it can be tiring for global network managers when members only consider their own situations. For this reason, it is preferable that the go-between leader is aided by the other stakeholders of the firm and the local institutions which know the specificity of each actor in specific territories.

Conclusion

The world knowledge economy leads to a moving and uncertainly world which will go on through the 21st century. The network process is fully adapted to thinking and acting in such a new world, because networks are able to link, through dynamic and cumulative feedbacks, opposing factors: the openness of the stakeholders to innovate and their confidence toward employees to succeed in implementing these innovations. A network process is able to plan long run innovative strategies by co-building the competitive advantages of organizations which link supply and demand as well as cooperation and competition behaviors. A network process is also able to act efficiency in the short run by using a co-management in information competitiveness for increasing the market shares of each organization. The success comes from the dynamic interrelations between three main tools of the information competitiveness: “sharing information and knowledge”, “active influence within and outside the networks” and the “protecting knowledge and competencies” which are both main factors in the knowledge economy.

For managing the new long run and short run strategies in the 21st century, two leaders have been clearly identified from a theoretical point of view. The “economic leader” designs the innovation strategies in the long run, paying attention to each stake holder who has a personal interest to cooperate for the success of the innovative process. The “go-between leader” manages the daily strategies and employs pragmatism and empathy towards all the members of the team working within network. In further works, it would be interesting to analyze in depth the new interrelations which appear in the 21st century between the efficiency of each stake holder and the collective efficiency of the organizations within the world knowledge economy.
References


REGIONAL ASPECTS OF ENTERPRENEURSHIP
Aneta Szymańska

Entrepreneurial approach to managing diversity: implications for organizational performance

“Diversity fosters creativity. We need to generate the best ideas from our people in all levels of the company and incorporate them into our business practices”.

Frédéric Rozé – Chief Executive Officer L’ORÉAL USA

Abstract: The author examines the issues connected with entrepreneurship and diversity in the workplace. From age to ethnicity, gender and other differences, entrepreneurship is becoming increasingly diverse, and managing diversity has become one of the determinants of the organizational success, responsible for the organization’s competitive advantage. The aim of this paper is to investigate the phenomenon of workplace diversity in the context of entrepreneurship and organizational performance. The study draws attention to the depth of the discussed problematics and identifies the gaps in research results concerning the significance and influence of diversity management on the various aspects of organizational performance.

The purpose of the research is to investigate employees’ perceptions on diversity in the workplace through developing insight into and knowledge of the current state of diversity in organizations in Poland. Secondly, the results of the research are meant to help to indicate the viable strategies which could be used to meet the demands of a diversifying workforce and enhance diversity management. Besides, the author investigates how diversity management can become an effective tool for entrepreneurs in the dynamically changing business environment.

In the statistical study, in order to identify differences regarding gender, age, nationality, position held, and professional experience, such tools as Mann-Whitney U test, Kruskal-Wallis ANOVA analysis, the Fisher’s exact test, and Spearman's rho coefficients were used. As it turned out, employees in the vast majority are aware of diversity in the workplace and its influence on organizational performance. However, there are statistically significant differences between representatives of different diversity determinants. These differences should be taken into consideration by entrepreneurs, as the more diversified the work environment, the better results can be achieved by the given organization – thanks to fostering greater creativity and innovation.

Keywords: entrepreneurship, diversity and inclusion, diversity management, organizational performance.
1. Introduction: Entrepreneurship and Diversity

There is a common agreement that entrepreneurship is highly relevant for the success of today’s societies owing to its effects on economic and technological development and the creation of new jobs (Baumol et al. 2007). Hisrich et al. (2007: 575) stress that “entrepreneurship is [...] a mechanism by which many people enter the economic and social mainstream of society, facilitating culture formation, population integration, and social mobility”. Thus today, entrepreneurial thinking and acting is seen as a twenty-first century skill, one of the basic meta-capabilities that the young generation will need to develop to be successful (Obschonka 2013; World Economic Forum 2009). Finally, an increasingly important field is now social entrepreneurship, i.e. tackling social, cultural, or environmental problems via entrepreneurial means. It is argued that entrepreneurial thinking and acting has the potential to foster positive social change.

Today’s organizations are heavily affected by globalization and changes in the demographic structure of the society. Since the sex, race, and ethnic diversity of organizations are now much broader than in the past, nowadays the number of members in the same organization sharing different backgrounds and values has increased to a great extent. Moreover, the rapid development in technology not only entails more trained and skilled workforce but also necessitates sharpening intercultural collaboration skills in the workplace. Organizations managing effectively a diverse workforce are capable of increasing organizational performance through innovation and creativity, reaching more people and customers. Thus those organizations embracing diversity acquire competitive advantage and increase profitability (Meric, Er, Gorun, 2015: 72).

As today’s companies continue to complain about a talent shortage, they have to work hard to attract diverse talent. Compared to the past, today the description of differences is wider and more inclusive when we take all the differences into consideration. According to Daft (2010), traditional approach to diversity takes the factors such as race, gender, age, and physical ability which are all determined by birth into consideration. On the other hand, contemporary approach to diversity is much more inclusive and it counts all the factors that make an employee different and assumes those factors can be acquired or altered as the time passes (Daft, 2010: 347). The new approach to diversity regards such factors as work background, income, marital status, military experience, political beliefs, geographic location, education, etc. – as changeable (Gomez-Mejia et al., 2012: 129).

Diversity is not a luxury but a necessity nowadays, therefore more and more organizations actively search for talent in underrepresented populations.
Their CEOs become advocates for finding, retaining, and promoting talent from communities that have been overlooked for years. Reaching out and attracting diverse talent is an ongoing challenge throughout the world. It may seem easy to find diverse people and bring them into the work environment, however keeping those people around is a much more complex issue, since workers will not remain in a workplace if they feel unwelcome or uncomfortable. Therefore, it is essential to make everyone feel included in an organization. It is the concept of diversity and inclusion that should be of premium importance for companies which want to be successful in this domain (Hendricks, 2016).

There is a strong link between diversity and entrepreneurship. All entrepreneurs should make the time to consciously factor diversity in as their business grows, as it presents significant benefits, ranging from new market opportunities to averting a crisis. Today’s global workforce is unrecognizable from a generation ago – there are more women in the workplace, more ethnic minorities on boards, and more CEOs open about their sexuality (McCory, 2015). Diversity fosters entrepreneurship, as it brings in creativity, drives better innovation, and encourages businesses to strive to be active citizens through adopting social entrepreneurship policies.

2. Theoretical Background and Literature Review

Demographical changes, fluctuating economies and technological disruption are only some of many dynamic forces, which have brought new opportunities and threats for organizations, as well as transformed societies from all over the world. In order to cope with these shifting forces, organizations and their publics are more and more aware of the significance of entrepreneurship. In society, the role of entrepreneurship has become prominent and in modern open economies it has become more important for economic growth and development than it has ever been (Toma, Grigore, Marinescu, 2014: 437).

Entrepreneurship is increasingly recognized by government officials throughout the world not only as “a key mechanism for enhancing economic development”, but also as “a good solution because it provides a relatively non-controversial way to increase the proverbial pie, creating jobs and enhancing per capita income growth” (Shane, 2005). That is why “entrepreneurs need access to resources and markets to succeed” (Kressel and Lento, 2012). One of the crucial resources are human resources, which play a vital role in the organizational performance.
The term “entrepreneur” seems to have been introduced by R. Cantillon, whose definition gravitated around assuming risk. Later, J.-B. Say stated that the entrepreneur shifts economic resources from an area of lower productivity to an area of higher productivity. The progress achieved in understanding entrepreneurship is largely due to J. A. Schumpeter, who adopted a different approach, underlying the role of innovation. Entrepreneurs are not only innovators and agents of change, but also coordinators of production. He suggested that entrepreneurship occurs under five conditions of newness: new goods, new production methods, new markets, new sources of materials, or new organizations (Schumpeter, 1911). According to the Schumpeterian view, the entrepreneurial process constitutes one of the key factors in the economic development (Toma, Grigore, Marinescu, 2014: 438).

However, the most recent and now popular, process and people oriented definition of entrepreneurship has emerged in the business literature: “Entrepreneurship is a process that involves the discovery, evaluation, and exploitation of opportunities to introduce new products, services, processes, ways of organizing, or markets” (Shane and Venkataraman, 2000: 219). According to Shane and Venkataraman (2000), the phenomenon of entrepreneurship has lacked a conceptual framework and therefore there are many attempts to define entrepreneurship in a complex way. Among many definitions, the one coined by Wennekers and Thurik (1999) is worth mentioning. They stated that entrepreneurship is the manifest of ability and willingness of individuals, on their own, in teams, within and outside existing organizations to perceive and create new economic opportunities (new products, new production methods, new organizational schemes and new product-market combinations), and to introduce their ideas in the market, in the face of uncertainty and other obstacles, by making decisions on location, form and the use of resources and institutions (Papulová, Papula, 2015: 515).

No matter how various and numerous definitions are created about entrepreneurship, they seem to share a common denominator. It is seen that the notion of entrepreneurship includes innovation and creativity, and the managers of companies acting in line with the modern business administration principle explain the concept of entrepreneurship with such notions as flexibility, taking risks, innovation, creativity, dynamism and being development-oriented (Dogan, 2015: 1289).

Research suggests that there is substantial diversity among entrepreneurs and their ventures (Gartner, 1985). These differences with respect to – for example – age, gender, skills, knowledge, personality, motivation and goals explain to some extent differences in venture performance (Baum et al., 2001). Accord-
ing to Hubbard (2004: 27), diversity management is defined as “the process of planning for, organizing, directing, and supporting collective mixtures in that way which adds a measurable difference to organizational performance”. Diversity management is not a clearly limited notion and it can include a wide range of various aspects. Hubbard (2004) divides it into two dimensions – a primary dimension (age, gender, ethnicity, mental and physical abilities and sexual orientation) and a secondary dimension (as for example religion, education, family status, income, location etc.).

Diversity management is a management idea which is underpinned by a belief that managing difference in the workplace can contribute to organizational performance. It can be defined as a management philosophy of recognizing and valuing heterogeneity in organizations with a view to improve organizational performance (Wright et al. 1995; Gilbert et al., 1999; Orlando et al. 2004). As a management idea, it only dates back to the late 1980s in the USA (Litvin 1997). However, it has gained wide international recognition and adoption internationally in the past two decades (Özbilgin and Tatli 2008).

Workplace diversity management is broadly defined as the systematic and planned commitment by the organization to recruit, reward and promote a heterogeneous mix of employees (Bagshaw, 2004). Diversity can be considered as a source for competitive advantage (Cox and Blake, 1991). According to resource-based view of the firm, there exists a positive relation between diversity and organizational performance (Barney, 1991). Since organizational performance is directly related with the upper-management of organizations, research about the demographic diversity of management remains a very important topic (Şener, Karaye, 2014).

In the past decades, there has been a growing interest regarding the concepts of diversity and entrepreneurship. Extensive studies in management literature may be found on the effects of diversity in organizations in general, and in work teams and boards in particular (Milliken and Martins, 1996; Jackson et al, 2003; see Carpenter, Geletkanycz and Sanders, 2004). Among these effects, the positive influence of diversity on organizational management and performance should be highlighted, since diversity provides managers with a broader view of problems and a rich portfolio of responses to market demands, which facilitates swift recognition of strategic opportunities (Pitcher and Smith, 2001; Carpenter et al., 2004). Research on the distinction between heterogeneous vs. homogeneous boards has focused on analyzing how organizations face changes. It is argued that homogenous boards facilitate rapid decision-making and reduce the risk of conflicts within a team. Heterogeneous boards, however, stimulate the search of new alternatives and courses of action that enable organizations to improve corporate performance (Finkelstein and Hambrick, 1996).
Empirical study finds that diversity management alone is insufficient for improving organizational performance. What is required instead is an approach that promotes greater inclusion of employees in ways that takes their views into account and promotes self-esteem. The results show that productive workplaces exist when employees are encouraged to express their opinions, and their input is sought before making important organizational decisions. This requires supportive leadership and empowering employees with information and resources that will help them make important decisions about their jobs (Sabharwal, 2014: 197). The challenge lies in integrating and utilizing a diverse workforce toward achieving organizational goals (Pless and Maak, 2004).

One of the essential factors that contribute toward creating inclusive environments is committed leadership that supports individual and cultural differences among employees (Miller, 1998; Pless and Maak, 2004; Ryan and Kossek, 2008; Shore et al, 2011). Such committed leadership would also utilize the talents of all members irrespective of their gender, race/ethnicity, age, sexual orientation, and so on. Simply by hiring a workforce for the sake of increasing representation is actually counter-productive (Bendick, et al., 2010). Productive organizations recognize this important issue and include employees in decision-making, thereby making them a critical part of the organization (Mor-Barak, Cherin, 1998). Entrepreneurs and leaders in the successful organization must devise strategies to eliminate systemic barriers and create workplace climate in which all employees are able to contribute to their fullest potential.

Building an inclusive environment is thus a combination of commitment from entrepreneurs and leaders, respect for diverse opinions and perspectives, and an institution that fosters equitable policies (Bendick, et al., 2010). Organizations that use an inclusive framework will consequently have better output (Stewart and Johnson, 2009). Such organizations go beyond hiring for diversity as a legal cover, but rather recognize that each individual is unique and has the potential to contribute toward the goals of the organization (Sabharwal, 2014: 200). Entrepreneurial approach based on effective diversity management understood as "the systematic and planned commitment by organizations to recruit, retain, reward, and promote a heterogeneous mix of employees" (Ivancevich, Gilbert, 2000: 75) seems to be the crux of the organizational success.

There is a significant body of research proving that the business case for diversity and inclusion in the workplace is irrefutable, bringing organizations five key benefits:

- better financial performance,
- better business performance and reputation,
• better customer connections and market share,
• better innovation and group performance,
• better and broader talent (The B Team, 2015).

Jacobs (1979) has argued that the degree of diversity in the workforce is an important source of entrepreneurship, as people with different backgrounds and experiences will tend to evaluate any given set of information differently. What’s more, evidence was found of a small but significant diversity bonus across innovation, market orientation, and entrepreneurship. The diversity of the management team has a small but robust link to the development and implementation of major new products. Migrant-run firms are more likely to introduce major process innovations (Nathan, Lee, 2013).

As we have already agreed, diversity has a crucial impact on entrepreneurship. However, the relationship between diversity and entrepreneurship depends crucially upon the exact type of diversity considered. While sectoral diversity tends to exert a negative effect on new firm foundation, cultural diversity has a positive and highly significant impact on technology oriented start-ups in general, technology oriented services and high-tech start-ups. This suggests that the diversity of people is indeed more conducive to entrepreneurship than the diversity of firms and that regions characterized by a high level of R&D and a high degree of cultural diversity form an ideal breeding ground for technology oriented start-ups (Audretsch, et al., 2009: 78).

The existing research presented in this paper may be viewed as a modest first step towards a more comprehensive analysis of the relationship between entrepreneurship and diversity and their influence on organizational performance. The issue of managing diversity in the context of entrepreneurship is of high relevance in modern societies and deserves more attention. The lack of sufficient research can be noticed regarding the perception of employees on issues connected with diversity management in the workplace and how successful diversity and inclusion contributes to different aspects of the functioning of the organization. There exists an evident gap in accessible research results concerning these problematic aspects and this study aims to fill the existing gap and explore this significant issue on the ground of companies operating in Poland. The author aims to fill this research gap by diagnosing diversity management perception in the current workplace and formulating recommendations on how to use diversity and inclusion in order to enhance entrepreneurship and performance.
3. Research Methodology, Analysis and Discussion

Diversity phenomenon takes part in modern management and intellectual era thanks to demographic, economics, social or juridical changes. Many business leaders in multinational corporations often speak on why diversity and inclusion is imperative to business success and how uncovering unconscious bias allows for different perspectives. These days we rarely find senior leaders openly hostile to diversity, however in many multinationals there is the absence of both diversity and inclusion, particularly at the top. Despite the investment of resources, many companies either ‘struggle’ or are ‘stuck’ in creating inclusive cultures and diversity in their general workforces. This is particularly noticeable in the upper echelons of senior leadership, where many positions are still largely occupied by white, middle aged men. Even young companies like Google struggle to address diversity and inclusion. According to its own figures, 70% of Google employees are men - 61% of whom are white. Additionally, women occupy only 21% of leadership roles. What’s more, the gap in the technical and nontechnical between male and female representation is even wider (Sharma, 2015).

Why is this phenomenon so complicated? And what does the situation look like from the perspective of employees of different age, gender, job position, educational background and professional experience? What could be done to improve the status quo?

In order to find answers to these and other questions, a survey was carried out on the sample of 115 people living and working in Poland. The research method used was diagnostic survey and the tool – questionnaire consisting of 38 questions (Szymańska, Aldighieri, 2017). The respondents were queried about their awareness on the topic of diversity management and their perceptions regarding this issue. In addition to that, the study was carried out to identify the strategies which could be implemented by the management to increase awareness on diversity of workplace.

The primary research objectives were defined as the following:
• to assess the level of awareness on diversity issues among employees;
• to analyze the most prevalent perceptions on workplace diversity;
• to identify the most effective strategies which could be adopted by management to increase awareness on diversity at workplace.

The author formulated the subsequent secondary objectives of the research:
• to indicate the importance of effective diversity management and its link to entrepreneurship;
• to formulate recommendations for entrepreneurs regarding diversity management policies which could be implemented in order to improve organizational performance.
In particular, the following research questions were posed:
• what is the employees’ level of awareness regarding diversity at the workplace?
• how important is diversity management for the success of the organization at present times and near future?
• what are employees’ perceptions regarding the importance and influence of diversity at the workplace?
• what strategies should be adopted by the management of the companies to increase awareness on workplace diversity?

The following hypotheses have been formulated for the purpose of the research:
• **H1**: There is significant awareness of workplace diversity and its importance for the success of the organization.
• **H2**: Women attribute more significance to diversity and its influence on the organizational performance than men.
• **H3**: Female workers find it more useful, enriching and challenging to work in a diversified environment than the male ones.
• **H4**: Women and Poles score higher in evaluating the adequacy of particular strategies that should be adopted by management to increase awareness of diversity in the workplace.
• **H5**: The lower the organizational position occupied, the more difficulties are identified when dealing with differences and more misunderstandings occur due to diverse backgrounds.
• **H6**: The higher the position held in the organization, the bigger significance perceived in the influence of increased diversity on the function in of the organization.
• **H7**: Employees of Polish nationality find it more challenging and desirable to work in a diverse working environment than people representing other nationalities.
• **H8**: Women and representatives of nationalities other than Polish see bigger potential in diversity and its influence on different aspects of the organizational performance.
• **H9**: The older the employee, the more challenging and desirable the diverse working environment is found.

In the statistical study, the Mann-Whitney U test was used to assess differences between women and men. This test was applied because the answers to the questions asked are on the Likert's order scale of 1-5. In the case of an independent variable related to the position held in the organization, because of more than two groups to be compared, the Kruskal-Wallis ANOVA analysis was used for comparison. In order to assess the relationship between nominal features, the Fisher’s exact test – the-chi squared test was applied with the Yates’s continuity correction for a 2x2 contingency tables. For these tables, the contin-
gancy coefficient $C$ of correlation was calculated. In the case of the scaled variables, to evaluate the relationship between them and the answers to the questions asked, Spearman’s rank correlation (Spearman’s rho) coefficients were calculated. All statistical tests have been calculated at the level of statistical significance of $\alpha=0.05$. This means that if $p<0.05$, then there is a significant difference or a significant relationship.

The profiles of the respondents are provided in Table 1 below.

**Tab.1.** The demographics of the respondents.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Levels</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>56,52%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>43,48%</td>
</tr>
<tr>
<td>Age Group</td>
<td>19-25</td>
<td>0,00%</td>
</tr>
<tr>
<td></td>
<td>26-35</td>
<td>28,70%</td>
</tr>
<tr>
<td></td>
<td>36-45</td>
<td>57,39%</td>
</tr>
<tr>
<td></td>
<td>45 plus</td>
<td>13,91%</td>
</tr>
<tr>
<td>Education</td>
<td>High school</td>
<td>9,57%</td>
</tr>
<tr>
<td></td>
<td>Bachelor</td>
<td>11,30%</td>
</tr>
<tr>
<td></td>
<td>Master</td>
<td>52,17%</td>
</tr>
<tr>
<td></td>
<td>Postgraduate</td>
<td>20,00%</td>
</tr>
<tr>
<td></td>
<td>PhD</td>
<td>6,09%</td>
</tr>
<tr>
<td>Experience</td>
<td>Up to 1 year</td>
<td>0,00%</td>
</tr>
<tr>
<td></td>
<td>2-4 years</td>
<td>13,91%</td>
</tr>
<tr>
<td></td>
<td>5-10 years</td>
<td>46,96%</td>
</tr>
<tr>
<td></td>
<td>Over 10 years</td>
<td>39,13%</td>
</tr>
<tr>
<td>Job Position</td>
<td>Administrative worker</td>
<td>2,61%</td>
</tr>
<tr>
<td></td>
<td>Specialist</td>
<td>31,30%</td>
</tr>
<tr>
<td></td>
<td>Line Manager</td>
<td>20,00%</td>
</tr>
<tr>
<td></td>
<td>Middle manager</td>
<td>20,87%</td>
</tr>
<tr>
<td></td>
<td>Top manager</td>
<td>12,17%</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>13,04%</td>
</tr>
<tr>
<td>Nationality</td>
<td>Polish</td>
<td>85,22%</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>14,78%</td>
</tr>
</tbody>
</table>
As it has been illustrated on Figure 1, the significant majority of the respondents (89%) declared that they are aware of diversity in their workplace.

![Are you aware of diversity at your workplace?](chart)

**Fig. 1.** Employees’ awareness of diversity at their workplace.

In most of the cases diversity management is perceived to be very important (42%) or rather important (39%) for the success of an organization at present and in the future. A total of 81% of the respondents believe that diversity management is a significant element of corporate governance (Figure 2). The cross-sectional study shows how various groups of respondents differ. Statistically significantly (Z=2.275; p=0.023) women in this variable have higher results (M=4.31) than men (M=3.88). Women look more bravely at managing diversity and see more potential in it than men. This is also confirmed by further studies and results from the cognitive experience of the particular groups.

![How important is diversity management for the success of an organization/company at present times and near future?](chart)

**Fig. 2.** The importance of diversity for the success of an organization.
Statistically significantly ($Z=2.831; p=0.005$) persons of Polish nationality in this variable have higher results ($M=4.59$) than people of other nationalities ($M=4.04$). This means that among the respondents (a significant group of people with higher education) there is a big opening to diversity in the workplace among Poles, higher than in other nationalities. The changes occurring in the labor market, openness to other nationalities and readiness for differences in the group have been confirmed in this research.

People having middle manager position have the highest scores ($M=4.48$) and the lowest scores are achieved by persons in specialist position ($M=3.51$). What’s more, the higher the education of the surveyed person, the higher the scores are obtained on a scale of 1-5 ($\rho=0.341; p<0.01$). The greater the professional experience of the examined person, the higher the scores are obtained on a scale of 1-5 ($\rho=0.439; p<0.01$). People with higher education see a great potential in opening up to a diverse work environment which translates into business success.

![Fig. 3. Employees’ perceptions regarding workplace diversity.](image-url)
Respondents have been queried about their perceptions regarding diversity issues in the workplace. It turns out that the overwhelming majority of the surveyed employees (94%) find it useful and enriching to work in a diversified environment. Similarly, the predominant majority (89%) are of the opinion that they need a diverse environment as they can learn a lot from others. However, the vast majority (84%) has stated that a diverse working environment poses additional challenges. Over half of the surveyed (52%) sometimes finds it difficult to get things done when dealing with differences or diverse people. Only every third person (32%) admits that they have never had any problem or misunderstanding with someone due to diverse background.

Statistically significantly \((Z=-3.703; \ p=0)\) women in the variable “I find it useful and enriching to work in a diversified environment” have lower results \((M=3.15)\) than men \((M=3.54)\). Similarly, statistically significantly \((Z=-2.774; \ p=0.006)\) women in the variable “A diverse working environment poses additional challenges” have lower results \((M=3.88)\) than men \((M=4.2)\). Also, women \((Z=-3.25; \ p=0.001)\) in the variable “I need a diverse environment because I can learn a lot from others” have lower results \((M=3.06)\) than men \((M=3.52)\). The same situation applies to variable “I sometimes find it difficult to get things done when dealing with differences/ foreigners/ people with different background” – women \((Z=4.35; \ p=0)\) have lower results \((M=2.97)\) than men \((M=3.72)\). In fact, also in variable “I have never had any issue/problem/misunderstanding with someone due to diverse background” women \((Z=-3.76; \ p=0)\) have lower results \((M=2.57)\) than men \((M=3.26)\).

Statistically significantly \((Z=3.483; \ p=0)\), persons of Polish nationality in the variable “A diverse working environment poses additional challenges” have lower results \((M=3.29)\) than people of other nationalities \((M=4.14)\). Similarly, in the variable “I need a diverse environment because I can learn a lot from others”, Polish employees \((Z=-2.057; \ p=0.04)\) have lower results \((M=2.88)\) than foreigners \((M=3.33)\).

In rating the statement “I sometimes find it difficult to get things done when dealing with differences/ foreigners/ people with different background”, persons holding specialist positions have the highest results \((M=3.74)\). The lowest results are achieved by persons in line manager positions \((M=2.58)\). Similarly, when rating the statement “I have never had any issue/ problem/ misunderstanding with someone due to diverse background”, persons in specialist positions have the highest scores \((M=3.43)\) and the lowest results belong to line managers \((M=2.58)\).

What’s more, the older the surveyed person, the lower the score achieved on the scale of 1-5 regarding the statement that a diverse working environment
poses additional challenges (\(\rho = -0.348; \ p < 0.01\)). Similarly, the older the respondent is, the lower the score he has on the scale as regards the opinion “I need a diverse environment because I can learn a lot from others” (\(\rho = -0.348; \ p < 0.01\)).

Next, the questioned employees have been examined regarding the strategies that should be adopted by the management of their organization to in order to increase the awareness of diversity in the workplace. They have been asked to rate particular activities within the proposed strategies on the scale from 1 to 5 (where 1 means inadequate and 5 – very good). The results referring to the evaluation of three discussed strategies have been displayed on Figures 4-6.

The first strategy which was evaluated was reducing prejudices and uses of stereotypes. The highest rank was given to initiative to dismiss myths about diversity (73% of the respondents classified this activity as very good or good), then work on bias awareness and willingness to face prejudices/uses of stereotypes (70%), and finally – insistence on values and fundamental differences (65%).

![Fig. 4. Reducing prejudices and uses of stereotypes as a strategy that could be adopted by management to increase awareness of diversity in the workplace.](image-url)
Statistically significantly (Z=-3.765; p=0) women in the variable “Insistence on values and fundamental differences” have higher scores (M=3.89) than men (M=3.3). Similarly (Z=-3.62; p=0), in the variable “Work on bias awareness and willingness to face prejudices/ stereotypes” women scored higher (M=4) than men (M=3.54). The same is adequate for the variable “Initiative to dismiss myths about diversity” (Z=4.303; p=0) – women have higher results (M=4.2) than men (M=3.6).

There are also statistically significant differences regarding respondents’ nationalities. Persons of Polish nationality (Z=3.463; p=0.001) in the variable “Insistence on values and fundamental differences” have higher results (M=4.29) than people of other nationalities (M=3.52). Equivalently, Polish workers (Z=-3.064; p=0.002) have higher scores (M=4.35) than foreigners (M=3.7) in the variable “Work on bias awareness and willingness to face prejudices/ stereotypes”. The Poles (Z=-3.001; p=0.003) also in the variable “Initiative to dismiss myths about diversity” have higher results (M=4.53) than employees of other nationalities (M=3.84).

Statistically significant differences can also be observed as far as the position held is concerned. In the variable “Insistence on values and fundamental differences” it is middle managers who have the highest results (M=3.83). The lowest results are achieved by persons in specialist positions (M=3.37). Specialists also have the lowest scores (M=3.31) in the variable “Education on avoidance of dangerous terms/words”. The highest results in this variable have been scored by line managers (M=3.88).

**Figure 5** presented below displays the results of evaluation of the particular activities which could become a part of strategy named “Improving communication among diverse people (different countries, cultures, genders, etc.)”. The highest rank was given to increasing contact among diverse people (84% of the respondents classified this activity as very good or good), then active listening education for employees (70%), next – education on avoidance of dangerous terms/ words (63%), and finally – creating campaigns on reduction of stereotypes (61%).
Statistically significantly ($Z=-2.972; p=0.003$) women in the variable “Increasing contact among diverse people” have higher scores (M=4.29) than men (M=3.94). Correspondingly ($Z=-4.816; p=0$), women score more (M=4.18) than men (M=3.3) in the variable “Active listening education for employees”, as well as ($Z=-3.163; p=0.002$) in the variable “Education on avoidance of dangerous terms/words” – women achieve M=3.85 and men M=3.44. Finally, women ($Z=-4.066; p=0$) in the variable „Create campaigns on reduction of stereotypes” have also higher results (M=3.88) than men (M=3.24).

Furthermore, statistically significant differences have been found regarding the nationality of the surveyed persons. Polish employees ($Z=-3.67; p=0$) in the variable “Increasing contact among diverse people” have scored higher (M=4.71) than other nationalities (M=4.04). Similarly ($Z=-3.782; p=0$), the Poles have higher results (M=4.59) in the variable “Active listening education for employees” than the foreigners (M=3.66). Also statistically significantly ($Z=-2.676; p=0.007$) the people having Polish nationality in the variable “Education on avoidance of dangerous terms/words” have higher scores (M=4.18) than other nationalities (M=3.58), as well as ($Z=-3.473; p=0.001$).
in the variable “Create campaigns on reduction of stereotypes” – the Poles achieved M=4.29, whereas other nationalities – M=3.48.

The older the questioned person, the higher scores are obtained on the scale of 1-5 regarding the variable “Create campaigns on reduction of stereotypes” (rho=0.317; p=0.001).

Furthermore, the more years of experience the researched person has, the higher the scores they have on the scale of 1-5 as regards the variable “Increasing contact among diverse people” (rho=0.372; p=0.001). The more years of experience the researched person has, the higher are the scores on the scale of 1-5 in the variable “Active listening education for employees” (rho=0.361; p=0.001), as well as in the variable “Create campaigns on reduction of stereotypes” (rho=0.376; p=0.001).

The next strategy which was evaluated by the respondents was helping to build professional relationships in the workplace among diverse people (Figure 6). The highest rank was given to working on perception of diverse as added value (75% of the respondents classified this activity as very good or good), then encouraging feedback from diverse (73%), next – initiatives to bond diverse employees with one another (72%).

How adequate would be the following actions as a strategy of helping to build professional relationships among diverse people to increase awareness of workplace diversity?

![Bar chart showing the adequacy of actions](chart.png)

**Fig. 6.** Helping to build professional relationships among diverse people as a strategy that could be adopted by management to increase awareness of diversity in the workplace.
Statistically significantly \((Z=-4.256; p=0)\) women in the variable “Initiatives to bond diverse employees with one another” have higher scores \((M=4.14)\) than men \((M=3.46)\). Similarly \((Z=-4.776; p=0)\) women score higher \((M=4.09)\) than men \((M=3.36)\) in the variable “Encouraging feedback from diverse”, as well as \((Z=-3.699; p=0)\) in the variable “Working on perception of diverse as added value” – women: \(M=4.11\) and men: \(M=3.52\).

In fact, also statistically significant differences have been observed as far as nationality is concerned. Persons of Polish nationality \((Z=-3.581; p=0)\) in the variable “Initiatives to bond diverse employees with one another” have higher results \((M=4.47)\) than people of other nationalities \((M=3.73)\). In addition, Polish workers have higher results \((M=4.53)\) than people of other nationalities \((M=3.64)\) in the variable “Encouraging feedback from diverse” \((Z=4.204; p=0)\), as well as in the variable “Working on perception of diverse as added value” \((Z=-2.824; p=0.005)\), where they scored \(M=4.29\) versus \(M=3.78\) for other nationalities.

In the variable “Encouraging feedback from diverse”, employees having positions of line manager have the highest results \((M=3.96)\). The lowest results are achieved by persons in specialist positions \((M=3.46)\). What’s more, in the variable “Working on perception of diverse as added value” the highest results are prescribed to top managers \((M=4.21)\). The lowest results are achieved again by specialists \((M=3.40)\).

The older the researched person is, the higher the score on the scale of 1-5 in the variables: “Initiatives to bond diverse employees with one another” \((\rho=0.336; p<0.01)\), “Encouraging feedback from diverse” \((\rho=0.366; p=0.001)\), and “Working on perception of diverse as added value” \((\rho=0.439; p<0.01)\).

Then as well, the more years of experience the respondent has, the higher scores are obtained on the scale of 1-5 regarding the variables: “Initiatives to bond diverse employees with one another” \((\rho=0.423; p=0.001)\), “Encouraging feedback from diverse” \((\rho=0.453; p=0.001)\), and “Working on perception of diverse as added value” \((\rho=0.534; p=0.001)\).
The surveyed were asked to rate on a scale from 1 (=not at all) to 5 (=a lot) how increasing diversity at their organization would improve the indicated aspects of the organizational performance (Figure 7). Significant statistical differences in the measured variables were identified on the basis of gender, nationality and position held.
Statistically significantly (Z=-1.971; p=0.049) women in the variable “Building good company image” have higher results (M=3.42) than men (M=3.02). Similarly, statistically significantly (Z=-2.788; p=0.005) women in the variable “Improving relationships with clients/customers/third parties” have higher results (M=3.42) than men (M=2.82).

Statistically significantly (Z=-3.753; p=0) people of Polish nationality in the variable “Improving creativity of employees” have higher results (M=3.88) than those of other nationalities (M=2.84). Statistically significantly (Z=-2.38; p=0.017) people of Polish nationality in the variable “Strengthening corporate culture” have higher results (M=3.76) than those of other nationalities (M=3.07).

In the case of the variable "Improving creativity of employees", respondents having specialist positions have the highest results (M=3.51) and the lowest results are achieved by persons occupying the position of line manager (M=2.25). For the variable "Strengthening corporate culture", people in the positions of specialist and top manager have the highest scores (M=3.32) and the lowest scores are achieved by persons in the positions of line manager (M=2.33). As far as “Building good company image” is concerned, top managers (M=3.57) have the highest scores and specialists (M=2.86) have the lowest scores. In the case of "Enhancing employer branding activities", middle managers have the highest scores (M=3.22) and the lowest scores are achieved by respondents in the position of line manager (M=2.71). With the variable "Improving relationships with clients/customers/third parties", middle manager positions have the highest scores (M=3.74), and the lowest scores are achieved by line manager positions (M=2.79). Finally, for the variable "Helping to decrease conflicts and litigation", the highest scores are achieved by middle managers (M=3.61) and the lowest by line managers (M=2.54).

The overall interpretation of the results verifies positively 6 out of 9 posed hypotheses. It turns out that in the workplace there is significant awareness of diversity and its importance for the success of the organization. Women attribute more significance to diversity and its influence on the organizational performance than men. Representatives of female gender and Polish nationality score higher in evaluating the adequacy of particular strategies that should be adopted by management to increase awareness of workplace diversity. The lower the position held, the more difficulties are identified when dealing with differences and more misunderstandings occur due to diverse backgrounds. The higher the position occupied in the organization, the bigger significance perceived in the influence of increased diversity on the functioning of the organization. Women and representatives of nationalities other than Polish see bigger potential in di-
versity and its influence on different aspects of the organizational performance than men and foreigners.

On the contrary, three of the formulated hypotheses have been rejected (H3, H7, H9). As it emerges, female workers find it less useful, enriching and challenging to work in a diversified environment than the male ones. They are prepared to work for the organizational rather than individual success. Surprisingly, employees of other than Polish nationality find it more challenging and desirable to work in a diverse working environment than people representing Polish nationality. What is even more astonishing, the older employees score lower than the younger ones in the statement that a diverse working environment poses additional challenges. The older the worker, the less needed is a diverse environment and the lower are the scores regarding the statement that workplace diversity provides more opportunities to learn a lot from others.

3. Conclusions and Implications for Practice

In general, the surveyed professionals are almost entirely aware of the fact that there exists diversity in the workplace (89%). Predominant majority (81%) of the employees believe that diversity management is significant for the success of an organization at present and in the future. What’s more, it is women who have higher scores (M=4.31) than men (M=3.88). Women are therefore more likely to experience greater diversity in the working environment than men. Men in the study group are more cautious about the positive interpretation if diversity management.

On the other hand, women (M=3.15) scored lower than men (M=3.54) in the statement “I find it useful and enriching to work in a diversified environment”. It may be due to the fact that women perceive diversity management more in terms of organizational success, not their own success. Unfortunately, they do not necessarily see the possibility of achieving their own success due to the diversity of the work environment – they are more likely perceive it in terms of the success of the company, rather than their own success.

Female workers have also lower results (M=3.88) than men (M=4.2) in the variable “A diverse working environment poses additional challenges”. This shows that men are more inclined to compete in a diversified work environment than women. Men are also statistically significantly scoring higher (M=3.52) than women (M=3.06) in their ability to learn new skills in a diversified work environment.
What’s more, women scored lower (M=2.97) than men (M=3.72) in the statement “I sometimes find it difficult to get things done when dealing with differences/diverse”. At the same time, women have a far better experience of working in a diverse environment. They do not see diversity as a problem in achieving common goals. On the other hand, women scored lower (M=2.57) in the variable “I have never had any misunderstanding problem with someone due to diverse background” than men (M=3.26), which may mean that women treat diversity more seriously than men and are more aware of the actual differences.

The questioned employees generally consider the diverse working environment to be creating additional challenges and opportunities to learn more. However, Polish employees scored lower in both variables (respectably M=3.29 and M=2.88) than the people of other nationalities (M=4.14 and M=3.33), who find it definitely more challenging and cognitive to work in a foreign environment. The Poles, however, have scored predominantly higher in the variables concerning estimation of the particular activities which could be undertaken as strategies for increasing awareness of diversity in the workplace – they see greater significance of these endeavours to enhance diversity.

Generally, the respondents believe that reducing prejudices and use of stereotypes, improving communication among diverse people and helping to build professional relationships in the workplace among diverse people would be good strategies which should be introduced by the management in order to increase awareness of diversity among employees. Women, however, score on average higher than men in estimating particular activities which could be undertaken within the mentioned strategies. This is a clear evidence that female workers perceive particular activities which could be undertaken to enhance diversity in the workplace as more powerful and significant for the organizational performance.

The lower the organizational position of the employee, the more difficult the given person finds it to deal with differences or diverse people, as well as the more misunderstanding problems they encounter due to diverse backgrounds. Employees holding lower positions generally rank lower the particular activities related to introducing managerial strategies to increase diversity awareness in the workplace.

Statistically significant differences have also been observed regarding the age of the examined. The older the employee, the lower the score regarding the statements that a diverse working environment poses additional challenges and creates opportunities to learn more from the others (rho=-0.348; p<0.01). The older the respondents are, the more likely they will be to rate higher such activities as creating campaigns on reduction of stereotypes (rho=0.317; p<0.001),
initiatives to bond diverse employees with one another (rho=0.3336; p<0.01), encouraging feedback from diverse (rho=0.366; p=0.001), or working on perception of diverse as added value (rho=0.439; p<0.01). And finally, the more professional experience the surveyed persons have, the stronger they will assess all possible features that are conducive to improving communication among diverse people and building good relations in the workplace among diverse employees.

The main concern of the study was to discover how diversity management influences organizational performance. The majority of the employees believe that increasing diversity would improve creativity of employees (82%), strengthen corporate culture (75%), build good company image (68%) and enhance employer branding activities (72%). Almost half of the surveyed believe that more diversified work environment would improve employee morale, retention and productivity (59%), improve relationships with clients/ customers/ third parties (59%), create opportunities for employees to get promoted (51%), and help to decrease conflicts and litigation (47%).

Generally, women have higher results than men in the variables “Building good company image” (women – M=3.42; men – M=3.02) and “Improving relationships with clients/ customers/ third parties” have higher results (women – M=3.42; men – M=2.82). Also, people of Polish nationality have higher scores than other nationalities in the variables “Improving creativity of employees” (M=3.88 vs. M=2.84) and “Strengthening corporate culture” (M=3.76 vs. M=3.07).

To recapitulate, focusing on the business case of diversity and inclusion in leading a business is an essential strategic initiative that should be grasped and championed by management. The facts are that diversity increases employee satisfaction, commitment, creativity, and productivity. Fostering a diverse work culture can have a positive reflection on customers as well, however this only resonates if employees and customers see the commitment in action from senior leadership. It is important for managers to understand how each diverse group feels within the organization, to genuinely care about the office culture, and accept and value the varied opinions of all groups of employees. When this happens, employee morale remains high, quality of work improves, and employee retention rates rise (Dwinell, Roberts, 2010: 48).

Some of the positive effects of employee diversity for an organization are as follows (Mullins, 2010: 154; Daft, 2012: 349):

- promoting cost-effective employment relations by better use of employee talent,
- enhancing customer relations,
• enhancing creativity, flexibility and innovation,
• promoting sustainable development and business advantage,
• reduced costs associated with high turnover, absenteeism, and lawsuits.

By offering new benefits to an organization, employee diversity also sets new challenges for the managers. Some of these challenges are as follows (Luis et al, 2012: 134):
• appropriately valuing employee diversity,
• balancing individual needs with group fairness,
• dealing with resistance to change,
• ensuring group cohesiveness and open communication,
• avoiding employee resentment and backlash,
• retaining valued performers,
• maximizing opportunity for all (Meric, Er, Gorun, 2015: 74).

There is recent consensus that diversity management needs to move from a passive (valuing diversity) to an active (diversity management) approach. This active approach should include mentoring programs, succession planning, family-friendly programs, alternative work arrangements, training, and accountability (Bozeman, Feeney, 2009; Kellough, Naff, 2004; Pitts, 2006; Roberson, 2006; Strachan, Burgess, Sullivan, 2004).

Diversity and inclusion training needs support, reinforcement and foundation in a broader talent management strategy that includes culture, leadership, as well as learning and development. The right kind of culture has to be fostered, where employees embrace differences, senior leaders model inclusive behaviors and value the innovation and market accessibility that diversity can provide, and promote diverse thinking and risk-taking. Teaching diversity and inclusion requires an integrated talent management mindset with firm leadership commitment to ensure behavioral change and to reap organizational value (Whitney, 2017).

Among leading diversity management practices, the following practices seem to be the most effective:
• top leadership commitment,
• diversity as part of an organization’s strategic plan,
• diversity linked to organizational performance,
• measurement of diversity program implementation,
• accountability of the leaders responsible for diversity,
• succession planning for an organization’s potential future leaders,
• recruitment of qualified, diverse applicants for employment,
• employee involvement in driving diversity throughout an organization,
• diversity training to inform and educate management and staff about diversity (GAO, 2005).

Lastly, despite the rapid diffusion of diversity management concept, research in the area has remained focused on large firms in the private sector (Bridgstock, 2010). As such, there is a significant lack of literature regarding diversity management as it relates to small firms, voluntary service sector organizations and social enterprises. It is evident that cultural diversity has a positive impact on technology oriented start-ups. This suggests that the diversity of people is more conducive to entrepreneurship than the diversity of firms. Thus, regions characterized by a high level of knowledge and cultural diversity form an ideal breeding ground for technology oriented start-ups (Audretsch, Dohse, Niebuhr, 2009). Therefore, future research should aim at broadening the evidence on this issue by investigating the relationship between diversity and entrepreneurship for other countries. Moreover, a more detailed differentiation of foreigners could provide insights into the significance of specific nationalities, professions and ethnic groups in fostering entrepreneurship on the global, national and regional level.

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Management of one bank’s financial risk

**Abstract:** Moral hazard as a special type of risk, which presents in the all financial risks is proved in the article. There are many ways to decrease moral hazard such as compliance, control, fine and others. We suggest reducing a moral hazard by the adjustment coefficient. Adjustment coefficient depends of eight factors and the direction of deviation of each. All factors divide in two basic groups: the first includes indexes for which certainly there is a maximal size and second - those for which certainly there is a minimum size. Each of them has a level of meaningfulness. For the calculation of this index we used the method of theory of fuzzy sets and the programmatic package of Matlab. If the adjustment coefficient is more than 1, it indicates that the bank's activity is associated with increased risk. As a result it is necessary to accept measures, in our case, to increase payment to the Deposit Guarantee Fund.

**Key words:** moral hazard, the adjustment coefficient, regulatory capital adequacy, Deposit Guarantee Fund, bank’s risk.

**Introduction**

Banking as a special type of entrepreneurial activity is a very important, unpredictable and, as a result, very risky activity.

The purpose of the article is to analyze financial risks and propose management options for the most unpredictable

There are many tapes of financial risks such as: credit, market, operation, liquid and others.

1. The first group – major risk: credit, market and operation. The Basel Committee on Banking Supervision (or BCBS) published many documents, rules, which can help to decrease this risk for banks. The most important documents are the next: Basel I, Basel II, Basel III.

“Basel III” is a comprehensive set of reform measures, developed by the Basel Committee on Banking Supervision, to strengthen the regulation, supervision and risk management of the banking sector. These measures aim to:

- improve the banking sector's ability to absorb shocks arising from financial and economic stress, whatever the source,
- improve risk management and governance,
- strengthen banks' transparency and disclosures.
The reforms target: bank-level, or microprudential, regulation, which will help raise the resilience of individual banking institutions to periods of stress.

Macropuendential, system wide risks that can build up across the banking sector as well as the procyclical amplification of these risks over time [www 1].

The second group – substantial: liquidity, business, reputation.

**Liquidity risk** is the potential that an entity will be unable to acquire the cash required to meet short or intermediate term obligations. In many cases, capital is locked up in assets that are difficult to convert to cash when it is required to pay current bills.

**Business risk** is the risk arising from a bank’s long-term business strategy. It deals with a bank not being able to keep up with changing competition dynamics, losing market share over time, and being closed or acquired. Business risk can also arise from a bank choosing the wrong strategy, which might lead to its failure [www 2].

**Reputational risk** is the risk of damage to a bank’s image and public standing that occurs due to some dubious actions taken by the bank. Sometimes reputational risk can be due to perception or negative publicity against the bank and without any solid evidence of wrongdoing. Reputational risk leads to the public’s loss of confidence in a bank.

The third group – peculiar:

1. **Systemic risk**
2. **Moral hazard**

**Systemic risk** is the name of the most nightmarish scenario you can think of. This type of scenario happened in 2008 across the world. Broadly, it refers to the risk that the entire financial system might come to a standstill. It can also be stated as the possibility that default or failure by one financial institution can cause domino effects among its counter parties and others, threatening the stability of the financial system as a whole.

**Moral hazard** refers to a situation where a person, a group (or persons), or an organization is likely to have a tendency or a willingness to take a high-level risk, even if it’s economically unsound. The reasoning is that the person, group, or organization knows that the costs of such risk-taking, if it materializes, won’t be borne by the person, group, or organization taking the risk.

But we want to describe such risk, which is presented in all financial risk. It is moral hazard.

When we analyze Ukraine’s legislation, there is no definition of moral hazard. In the methodical instructions for the bank’s inspection «The system of estimation of risks», there are such risk: credit risk, liquidity risk, risk of change
of interest rate, market risk, currency risk, operation technological risk, risk of reputation, legal risk and strategic risk [www 3]. There are analogical types of risk in another legislation documents. Basel committee selects three basic types of risks: credit, market and operation (Amendment to the Capital Accord to incorporate market risks, 2005).

According to Kevin Dowd, famous academic economist, the moral hazard is when one party is responsible for the interests of another, but has an incentive to put his or her own interests first: the general example is a worker with an incentive to shirk on the job (Kevin, Dowd, 2009).

Moral hazard is determined in investopedia as the risk that a party of a deal has not entered into the contract in good faith, has provided misleading information about its assets, liabilities or credit worthiness, or has an incentive to take unusual risks in a desperate attempt to earn a profit before the contract settles [www 6].

1. **Moral hazard in financial sphere and entrepreneurship**

These two definitions give us the ground to present our own vision of what moral hazard is. The moral hazard is the risk that one party of agreement will carry out actions that are undesirable for the other party, which is unable to control the behavior of that party. Moral hazard appears when all parties have different amounts of information.

We can see the examples of moral hazard in financial sphere:
- Somebody might sell another person a financial product (e.g., mortgage) knowing that it is not in his interests to buy it.
- Somebody might pay himself excessive bonuses out of funds that he manages.
- Somebody might bear risks from the operation done by another person.

We can see the examples of moral hazard not only in financial or banking sphere, but even in our life.

The example of moral hazard in banking sphere can be a situation when the worker of the bank offers credit to another person knowing that this person has low credit worthiness. At the beginning the worker is rewarded because of one more deal, and as the result the bank can lose great sum of money. Such phenomenon was usual for banking sphere before 2007 and it became one of the reasons of World financial crisis.
The conditions of existing of moral hazard are: existing of a base for cooperation or exchange, divergence of interests, difficulty of control and checking the quality of contract’s implementation and limited liability for actions undertaken (Laurence A. Krause, 2009).

There are several levels of moral hazard: the micro level and the macro level. At the level of individual bank moral hazard appears during the bank’s credit operations, and from the borrowers which are clients of the bank. So the bank's moral hazard lies in the fact when it provides lending activities, it mainly focuses on increasing lending, without paying significant attention to credit worthiness of customers. As a result this can lead to losing all or a part of the funds or even to a bankruptcy. Finally the depositors do not get their money back in time or they lose them at all.

The European Systemic Risk Board published a report on solving the problem of non-performing loans in the European Union. ESRB stressed that the condition of those loans can threaten stability of the financial system.

At the end of 2016 the gross value of non-performing loans (NPLs) in the EU’s banking sector reached almost EUR1.1 trillion (about 5 per cent of total loans), and in net terms (gross value minus any deductions) – EUR554bn. The average value of NPL ratio in the EU is 5.1 per cent but the NPL level varies substantially from 1-2 per cent (e.g. in Luxembourg and Finland) to almost 50 per cent (in Greece and Cyprus), while in over one third of EU member states it exceeds 10 per cent. [www 8].

The work carried out by the ESRB is one in a series of works undertaken by European authorities to address this issue. The Financial Services Committee, under the EU Council, has been working intensively on this topic since July 2016. The EBA (2016) published a report on recent trends in the stock of NPLs in the EU, as part of which it identified several impediments to a quick and efficient resolution of the stock of NPLs. In March 2017, ECB Banking Supervision published its guidance to banks on NPLs (ECB Banking Supervision, 2017). The ECB is also working on identifying the optimal design of NPL resolution frameworks, including drafting guiding principles on balance sheet clean-up, policy options for NPL resolution and the optimal sequencing of those measures. Results of this work were published in the ECB November 2016 and May 2017 Financial Stability Reports (Fell et al., 2016 and 2017) [www 9].

The situations with problem loans you can see at the next diagram (Figure 1).

Very important for survey to analyze correlation between Loans and advances to NFC and profit. No other home loan or mortgage product offers the types of loans offered by NFC – that is the NFC Advantage. At the next finger we can see correlation between Loans and advances to NFC and profit (Figure 2).
Fig. 1. Gross and net NLP in some Europe country reference date for all columns is the fourth quarter of 2016.
Source: ECB Consolidated Banking Data [www 10].

Fig. 2. Correlation between Loans and advances to NFC and profit in some Europe country reference date for all columns is the fourth quarter of 2016.
Source: ECB Consolidated Banking Data [www 10].
At the macro level, moral hazard appears from the central banks and the state. The matter is that every state can get loans from international organizations such as the International Monetary Fund (Diamond, D. W., Rajan, R. G., 2001). When creditors supply loan capital, they ignore problematic debtor’s situation because they hope for assistance from international financial institutions in case of non-return debt.

Such situation is in the relationships between many country and the International Monetary Fund. Everyone knows how much money countries get from it, and everyone understands that many countries have low level of credit worthiness.

That situation had been, because many countries have very high level of moral hazard. That is why one of the way to increasing moral hazard is proposed.

2. The method of determine the risk of bank as a special type of entrepreneurial activity for reducing moral hazard

In our opinion, the solving of the problem of moral hazard’s existence is possible by determining the bank’s risk. To determine the bank’s risk, we offer on such algorithm which consists of the followings stages:

1. First – to choose the indexes which characterize the risk of a bank.
2. Second – to determine of indexes’ meaningfulness.
3. Third – to unite all indexes in a general formula.
4. Fourth – to calculate the adjustment coefficient for a bank.
5. Fifth – to increase the payments which depend on the size of coefficient.

We think, that main economic indicators are regulatory capital adequacy, the ratio of borrowed capital to own, the share of problem loans in total, the ratio between deposits and capital, the ratio of deposits and bank assets, return on assets, return on equity, the ratio of the growth rate of profits and assets. There are main indexes and its formulas for calculation in the table 1.

To calculate of meaningfulness each of eight offered indexes by the method of Saaty (Saaty, T., 1993; Pospelova, D. A., 1986).

The method of hierarchies can solves this problem. The indicators represent a fuzzy set. To determine the priority it needs to build matrix, which is a square, diagonal and inverse symmetry.
\[ A = a_{ij}, \]

where:

- \( A \) – matrix of pairwise comparisons;
- \( a_{ij} \) – shows how much the item \( u_i \) exceeds the \( u_j \);
- \( i, j \) – from 1 to \( n \);
- \( n \) – number of elements.

The priority level has been determined on a scale of Saaty. It is the next:
1 – it is no the superiority \( u_i \) over \( u_j \);
3 – slight superiority \( u_i \) over \( u_j \);
5 – significant superiority \( u_i \) over \( u_j \);
7 – explicit superiority \( u_i \) over \( u_j \);
9 – the absolute superiority \( u_i \) over \( u_j \);
2, 4, 6, 8 – interim comparative evaluation.

Eigenvector we find the following system of equations

\[
\begin{align*}
A \cdot W &= \lambda_{\text{max}} \cdot W \\
W_1 + W_2 + \ldots + W_n &= 1
\end{align*}
\]

where:

- \( A \) – matrix of pairwise comparisons;
- \( \lambda_{\text{max}} \) – the maximum eigenvalue \( A \);
- \( W \) – coordinates of the eigenvector.

When we constructed eigenvector the base index was regulatory capital adequacy, because it determines ability of banks’ capital to cover basic financials risk. We received next eigenvector:

\[
\begin{align*}
 &u_1, u_2, u_3, u_4, u_5, u_6, u_7, u_8 \\
 &1, 3, 3, 5, 7, 3, 5, 7,
\end{align*}
\]

where:

- \( u_1 \) – regulatory capital adequacy;
- \( u_2 \) – dependency ratio;
- \( u_3 \) – the quality of loans;
- \( u_4 \) – ratio of capital and deposits;
- \( u_5 \) – the ratio of deposits and bank’s assets;
- \( u_6 \) – return on equity;
- \( u_7 \) – return on assets;
- \( u_8 \) – correlation of increases of net income and assets.
Tab. 1. Main indexes and formulas to its calculation

<table>
<thead>
<tr>
<th>No.</th>
<th>Index</th>
<th>Formula</th>
<th>Threshold value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regulatory capital adequacy</td>
<td>( H_z = \frac{K}{E_{RWA}} )</td>
<td>Minimum value is evened 10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( K ) – regulatory capital;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>( E_{RWA} ) – an equivalent of risk-weighted assets</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Dependency ratio</td>
<td>( \frac{K_{al}}{K_{ok}} )</td>
<td>The attracted capital must not exceed own more than in twelve times</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( K_{al} ) – capital is attracted and lent;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>( K_{ok} ) – own capital</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>The quality of loans</td>
<td>( \frac{K_p}{K_{all}} )</td>
<td>Critical value 5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( K_p ) – problem credits;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>( K_{all} ) – lump sum of credits</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Ratio of capital and deposits</td>
<td>( \frac{D}{K} )</td>
<td>It must be less than 10.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( D ) – deposits;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>( K ) – capital</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>The ratio of deposits and bank’s assets</td>
<td>( \frac{D}{A} )</td>
<td>Maximum value is evened 60%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( D ) – deposits;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>( A ) – bank’s assets</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Return on equity</td>
<td>( \frac{I_n}{K} )</td>
<td>Minimum value 15,0 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( I_n ) – net income;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>( K ) – capital</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Return on assets</td>
<td>( \frac{I_n}{A} )</td>
<td>Minimum value 1,5 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( I_n ) – net income;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>( A ) – assets</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Correlation of increases of net income and assets</td>
<td>( \frac{I_{n1}}{I_{n0}} \cdot \frac{A_1}{A_0} )</td>
<td>More than 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( I_{n1} ) ta ( I_{n0} ) – accordingly net income of current and previous years;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>( A_1 ) ta ( A_0 ) – accordingly assets of current and previous years.</td>
<td></td>
</tr>
</tbody>
</table>
The next coefficients of meaningfulness by the programmatic package of Matlab have been got regulatory capital adequacy – 0,3722; dependency ratio – 0,1241; the quality of loans – 0,1242; ratio of capital and deposits – 0,0745; the ratio of deposits and bank’s assets – 0,0532; return on equity – 0,1241; return on assets – 0,0745; correlation of increases of net income, assets and deposits – 0,0532.

All of indexes divided on two basic groups: the first includes indexes for which certainly there is a maximal size, and second - those for which certainly there is a minimum size. Basic descriptions of these indexes are presented in a table 2.

Tab. 2. There is threshold value and level of meaningfulness of indexes, which use to determine bank’s risk.

<table>
<thead>
<tr>
<th>Group</th>
<th>Index</th>
<th>Threshold value</th>
<th>Level of meaningfulness</th>
</tr>
</thead>
<tbody>
<tr>
<td>First, which includes indexes for which</td>
<td>Dependency ratio</td>
<td>12,000</td>
<td>0,1241</td>
</tr>
<tr>
<td>certainly there is a maximal size</td>
<td>The quality of loans</td>
<td>0,05</td>
<td>0,1242</td>
</tr>
<tr>
<td></td>
<td>Ratio of capital and deposits</td>
<td>10,000</td>
<td>0,0745</td>
</tr>
<tr>
<td></td>
<td>The ratio of deposits and bank’s assets</td>
<td>0,600</td>
<td>0,0532</td>
</tr>
<tr>
<td>Second, which includes indexes for which</td>
<td>Regulatory capital adequacy</td>
<td>0,100</td>
<td>0,3722</td>
</tr>
<tr>
<td>certainly there is a minimum size</td>
<td>Return on equity</td>
<td>0,150</td>
<td>0,1241</td>
</tr>
<tr>
<td></td>
<td>Return on assets</td>
<td>0,015</td>
<td>0,0745</td>
</tr>
<tr>
<td></td>
<td>Correlation of increases of net income and</td>
<td>1,000</td>
<td>0,0532</td>
</tr>
<tr>
<td></td>
<td>assets</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

After defining the calculation of economic indicators we should find out the level of the risk with the help of adjustment coefficient. It takes into account the level of significance of each of the eight proposed factors and the direction of deviation of each.

The formula of adjustment coefficient is (Cherkashyna, K. F., Nabok, R. M., 2010):

$$K = \sum_{i=1}^{n} W_i \ast \left( \frac{\varepsilon_i}{\varepsilon_{oi}} \right) + \sum_{j=n+1}^{m} W_j \ast \left( \frac{\varepsilon_{0j}}{\varepsilon_j} \right)$$
\( K \) – adjustment coefficient

\( Wi \) – level of significance of indicators that should be equal or lower than the threshold

\( \varepsilon \) – coefficient for which the maximum size is defined.

\( \varepsilon_{oi} \) – maximum threshold coefficients

\( Wj \) – level of significance of indicators that should be equal or higher than the threshold

\( \varepsilon_{oj} \) – minimum threshold coefficients

\( \varepsilon_j \) – coefficient for which the minimum size is defined

It is possible to use the adjustment coefficient in such situation. There are three banks: Bank A, Bank B, Bank C.

We want to describe the activities of each of the banks.

The Bank A has an optimal ratio between assets and liabilities.

Bank B gives many credits.

The Bank C attracts a lot of deposits.

The adjustment coefficient for these banks is based on analyzing of their activity (Table 3).

**Tab. 3.** There are indicators of some banks.

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Bank A</th>
<th>Bank B</th>
<th>Bank C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulatory capital adequacy</td>
<td>0,110</td>
<td>0,090</td>
<td>0,080</td>
</tr>
<tr>
<td>Dependency ratio</td>
<td>7,000</td>
<td>10,000</td>
<td>14,000</td>
</tr>
<tr>
<td>The quality of loans</td>
<td>0,013</td>
<td>0,070</td>
<td>0,022</td>
</tr>
<tr>
<td>Ratio of capital and deposits</td>
<td>3,000</td>
<td>7,000</td>
<td>13,000</td>
</tr>
<tr>
<td>The ratio of deposits and bank’s assets</td>
<td>0,200</td>
<td>0,800</td>
<td>1,000</td>
</tr>
<tr>
<td>Return on equity</td>
<td>0,125</td>
<td>0,111</td>
<td>0,131</td>
</tr>
<tr>
<td>Return on assets</td>
<td>0,014</td>
<td>0,008</td>
<td>0,016</td>
</tr>
<tr>
<td>Correlation of increases of net income and assets</td>
<td>1,100</td>
<td>0,750</td>
<td>1,300</td>
</tr>
<tr>
<td>Adjustment coefficient</td>
<td>0,760</td>
<td>1,192</td>
<td>1,103</td>
</tr>
</tbody>
</table>
As a result Bank A has a valid value of adjustment coefficient. Bank B has the most value of adjustment coefficient so it has more moral hazard.

**Conclusions**

With the help of this coefficient the level of risk of bank’s activities is specified. There are 2 situations, when the coefficient is less or equal to 1, and when it is more than 1.

We should note that when adjustment coefficient is less or equal to 1, the activity of the bank isn’t risky.

If the coefficient is more than 1, it indicates that the activity of the bank is associated with increased risk. Some measures should be taken. It can be payments to the Deposit Guarantee Fund.

It was determined that the increase of adjustment coefficient at 0.10 should increase payment to the Deposit Guarantee Fund at 0.1% per year. Such action would solve two major problems at once: to increase the amount of money of fund, and reduce the moral hazard which appears in the bank.

Differentiation of the size of the insurance deposit depending on the level of the bank’s risk, allows eliminating the desire of banks to hold too risky operations, because the bank will have to pay higher contributions. Another positive effect on differentiation of contributions is the increasing of the resource base of the Deposit Guarantee Fund, which will allow him to expand the range of functions performed.

To conclude, we should note that implementation of payments to the Deposit Guarantee Fund which depend on the level of moral hazard in bank’s activity will increase trust for the banking system by both individuals and legal entities, which in turn will increase the resource base of the banking system of Ukraine.

There is one way to decrease moral hazard on micro level in the article. There are many another ways such as compliance, control, fine and others.

**References**

*Basel III: international regulatory framework for banks*, http://www.bis.org/bcbs/basel3.htm?m=3%7C14%7C572


Development of entrepreneurship in Dolnośląskie Voivodship after accession of Poland to the European Union

Abstract: In this paper, based on the findings of the CSO research and referring to the concept of European enterprise demography, as a part of the OECD and Eurostat, Entrepreneurship Indicators Programme (EIP), the development of entrepreneurship in the Lower Silesia was presented after the accession of Poland to the European Union. The analysis showed that both the level and the pace of socio-economic development measured by entrepreneurship indicators for the province. Lower Silesia in the period 2004-2016 were generally better than the average in Poland. In the analysis of local entrepreneurship monitoring, the indicator expressing the relation of newly registered entities to deregistered ones was of particular importance. The value of this indicator pointed to the growing position of the Dolnośląskie Voivodship among other voivodships, which illustrates its greater inclination to choose an entrepreneurial path than to abandon this path. Over the last decade, companies in the Dolnośląskie Voivodship have distinguished themselves with a large dynamics of the size of their revenues and with a significant level of investment in innovative activity. This situation shows a relatively higher propensity for pro-development activities, especially in the sphere of innovative activities.

Introduction

Entrepreneurship is a very broad, multi-faceted issue of an interdisciplinary nature\(^1\). In the narrower sense entrepreneurship is connected with an activity in the field of undertaking business activity - the fact of establishing or running of own enterprise (including taking on employees). In a much broader context, entrepreneurship is synonymous with the phenomenon, the process of entrepreneurial activity, people with some social competence, who are distinguished by intelligence, innovation, creativity, the ability to perceive

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\(^1\)The term “entrepreneurship” first appeared at the turn of the 18th and 19th centuries. Including in the works of economic and social representatives of liberal thought. The precursors are: A. Smith, J. B. Saya and J. Schumpeter – cf. Potocki A. (2000), p. 20; in the scientific literature there is also a conception that the precursor of the concept of entrepreneurship (from the French entrepreneur ‘entrepreneur’) was French economist R. Cantillon – cf. – T. Piecuch, (2010), p. 15.
the conditions and relationships between economic phenomena and the ability to use them and emerging opportunities.

In the academic literature, especially in the field of business management, there is a multitude of definitions of entrepreneurship. One can see a certain evolution of views, emphasizing various aspects of entrepreneurship, generally referring to the so-called social competence and entrepreneurial behaviors.

I. Schumpeter (traditionally associated with the first concepts of entrepreneurship) treated this concept as a state of mind and attitude, a way of thinking and acting. Entrepreneurship was seen in, in conjunction with groundbreaking innovations, stet-of-the art activities (Schumpeter, 1960, p. 104).

Entrepreneurship can be understood as a form of activity, a characteristic of an entrepreneur and an enterprise, which is understood as the willingness and ability to make and solve new problems in a creative and innovative way, an ability to use emerging opportunities and flexible adaptation to changing conditions. The innovations can be considered as the basis for such actions (Drucker, 1992, p.7; 2004, p. 161).

In the economic dimension, the research stream defines entrepreneurship in terms of results of activity, effectiveness of activities, among others, in scientific research referring to the concept of F. Knight (1921) according to whom the risk is a category entered in the business activity and entrepreneurship means the profit achieved in exchange for the uncertainty and risk or research flow A.H. Cole (1959), when identifying entrepreneurship with intentional activity, aimed at establishing and developing a profit-oriented company.

Also, already mentioned J. Schumpeter (1934) emphasized that entrepreneurship was an activity that involved the introduction of new combinations of factors of production and the creation of new, more effective organizational forms of economic activity (A. Gawel, 2007, p. 234).

According to the proposed concept developed by J.W. Carland the key factor to distinguish real entrepreneurs is connected with the fundamental motivation - the realization of financial goals closely linked to the needs of their own family. On the other hand, an entrepreneur is a person who, when making a decision, is motivated by a growth and a profit. It is characterized by innovative

---

behavior and the application of strategic management methods (Carland et al., 1984, p. 358, 2001, p. 75).

Many modern scientific studies identify entrepreneurship with an ability to see new chances, find opportunities, achieve goals (including profit), maximize financial results (see, e.g. A. Skowronek-Mielczarek, 2003, p. 214, Srużycki, 2002, pp.109-113). Entrepreneurship means, in a synthetic sense, an ability to translate the broadly understood knowledge, individual characteristics of the human being and social patterns into measurable economic or social effects (P. Chmieliński, 2006, p.171).

A number of years ago, the OECD, in cooperation with Eurostat, initiated the EIP – Entrepreneurship Indicators Program, an attempt to harmonize cyclical surveys of entrepreneurship internationally. EIP is one of the key elements of enterprise demography that is launched to develop methods for continuous and harmonized measurement of business development indicators and the factors that drive it.

Three categories of indicators that describe the determinants of entrepreneurship have been proposed:

• indicators of entrepreneurial development or stagnation (e.g. capital availability, education and training, research and development, access to finance);
• the results of entrepreneurship (e.g. indicators based on the number of start-ups - „birth” and liquidated – „death”, survival rates, first-term survival and development indicators);
• the impact of entrepreneurship on the socio-economic situation (e.g. on job creation, economic growth or poverty reduction).

The creation of the above model and indicator groups constituted the basis for the collection of comparable empirical data for European countries.

The Central Statistical Office has repeatedly tried to investigate the phenomenon of entrepreneurship in Poland. Using the experience of the EIP program, a methodology for the analysis of entrepreneurship was developed on the basis of the available statistical data and a new survey was introduced in 2011 for public statistics. The results of these studies provide basic information characterizing the development and conditions of the formation and the state of activity of the examined group of entities during the first 5 years of operation – previously presented only at the country level. No data at voivodeship level.

In this study, entrepreneurship analysis in the Dolnośląskie Voivodeship is based on the concept of European enterprise demography, as a part of the
OECD and Eurostat, Entrepreneurship Indicators Program (OIPD), mainly focusing on entrepreneurship in terms of results.

Due to the lack of empirical data from homogeneous studies on entrepreneurship at the level of voivodeships, the indicators used for the purposes of the study were based on data from the REGON national economic register, which shows activity in business activity.

In this aspect, the measurement of entrepreneurship includes, among others, the number of start-ups - newly registered (companies) and deregistered ones (e.g. those who fail due to strong competition).

At the same time, references were made to indicators of success and effectiveness in running a business. In the present study, the basic indicators of effectiveness (success) are financial ratios, which aim at assessing the economic and financial standing of economic units of the voivodeship (e.g. rate of return, income from total activity, percentage of companies showing net profit).

The example of industrial enterprises has also been characterized by the tendency to undertake innovative actions by entrepreneurs.

Selected aspects of entrepreneurship were described by means of features whose numerical values were indicators which made it possible to compare the voivodeships that differentiated among others in terms of population and the number of companies operating.

The source of empirical data in the study is the results of the Central Statistical Office research from 2004-2017.

The selected time range is a period of changing conditions and transformations in socio-economic life. It was interesting to examine whether, in the context of membership of the European Union, an acquisition of EU funds has made use of emerging opportunities for development.

The multi-year study period was divided into sub-periods: before the global financial crisis (2004-2008) and after its occurrence – the economic slowdown in Poland in 2009-2012 and the years 2013-2016, where symptoms of economic recovery were observed.
2. Entities of the national economy in REGON register

In the end of December 2016 in the Dolnośląskie Voivodeship 361,3 thousand entities of the national economy (without individual farms\(^3\)), i.e. 8,5\% of all entities registered in the country were registered in REGON register. Compared to 2004 the number of total entities increased by 56,8 thousand, i.e. by 18,7\% (by 18,5\%). In terms of dynamics of growth of the number of entities registered in the REGON register, Dolnośląskie Voivodeship was ranked 6th in the country. The largest number of business entities was registered in Mazowieckie Voivodeship – a growth by 34,5\%. Only in the Łódź Voivodeship there was the loss of business entities – by 0,6\%. In the analyzed period of 2004-2016, most of the Dolnośląskie Voivodeship companies had a declared type of service activity (77,9\% of total units in 2016 and 79,1\% in 2004), including a significant part in trade, repair of motor vehicles, real estate, information and communication. Compared to the previous 12 years, interest in running a construction business increased slightly (representing 10,1\% in 2016, compared to 11,5\% in 2004), particularly in the area of specialized construction and a reduction in the sector (from 9,5\% to 8,0\%).

Over the whole period of the analyzed period, the number of entities in the REGON register per 10 thousand inhabitants in the Dolnośląskie Voivodeship is kept high - in the 3rd place in the country (after the Mazowieckie and Zachodniopomorskie Voivodeships), except for the years 2009-2012, where the Dolnośląskie Voivodeship took the 4th place. At the end of 201 per 10 thousand inhabitants there were on average 1244 entities, which is 141 entities higher than the national average (at the end of 2004 – 1051 entities slightly lower than the national average of 115). There is an increase in the cross-sectional area between the extreme values of the indicator (see graph 1).

In line with the concept of European enterprise demography, apart from analyzing the resources of business entities, the attention has been paid to the flow of new entrants („births” of companies) and the outflow of individuals – the closure of business („death” companies). Taking into account the stream of newly registered units (in relation to the population) in the following years after the accession of Poland to the EU, the period 2004-2010, in which the value of the index was characterized by an upward trend (from 74 new entities to 116 new entities per 10 thousand of the population, which was over 1,5 times

\(^3\) The REGON register enters entities of the national economy (legal entities), i.e. legal persons, organizational units without legal personality, natural persons conducting business activity and their local units (enterprises, branches, subsidiaries).
higher). In the following years, however, a slight decrease in the inclination of the inhabitants of the Dolnośląskie Voivodeship to establish their own business was visible. There were some slight fluctuations with a slight downward trend in unit enrollment, although the level of the years 2004-2008 was still exceeded. In 2016 REGON registered 28,8 thousand of new business entities, which gave per 10 thousand inhabitants 99 new businesses (on average 91 entities in the country), i.e. 25 entities fewer than in 2010. In terms of intensity of the stream of „birth” of companies (tendency to start their own business), the Dolnośląskie Voivodeship was ranked in the top five voivodeships (among others in 2016 - 4th place, in 2010 and 2004 – 5th places).

New entities were registered mainly in the following sections: trade; repair of motor vehicles, construction and professional activity, scientific and technical activities.

Compared to previous years, the influx of new businesses declaring their activity in the following sectors: agriculture, wholesale and retail trade; repair of motor vehicles (including, in particular, retail, except of motor vehicles), accommodation and catering activities (including food service activities), financial and insurance activities (including support activities financial services and insurance and pension funds), real estate services decreased. On the other hand, the tendency to start up own business in the following areas: software activities, head offices; management consultancy, office administration activities increased.

In the case of a stream of sketches from the REGON register, a slight upward trend was observed in the Dolnośląskie Voivodeship for the past few years, although still the number of registered entities (the number of people finally decided not to run their own company) was lower than the number of newly registered entities. ) and the balance of registration was positive. The number of stocks on the market of companies increased.

Only in the case of two years: 2005 and 2011, the number of deregistered businesses was higher than the number of newly registered entities

In 2016 24,700 business entities (by 17,6% more than in 2012 were deleted from the REGON register (5,2% decrease for newly registered entities). The upward trend in the deletions from the registry was particularly noted in such divisions of Polish Classification of Activities as: accommodation and catering services, education, wholesale and retail trade in motor vehicles, repair of motor vehicles, insurance, reinsurance and pension funds.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Poland</th>
<th>Dolnośląskie Voivodship</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(X_T) Entities total (as of 31 XII)</td>
<td>936,8</td>
<td>985,7</td>
</tr>
<tr>
<td>(X_N) Entities newly registered (during the year)</td>
<td>61,1</td>
<td>83,4</td>
</tr>
<tr>
<td>(X_R) Entities removed (during the year)</td>
<td>51,0</td>
<td>64,3</td>
</tr>
<tr>
<td>(X_N - X_R) Difference (the balance)</td>
<td>10,2</td>
<td>19,1</td>
</tr>
<tr>
<td>(X_N/X_R) Quotient</td>
<td>1,2</td>
<td>1,3</td>
</tr>
<tr>
<td><strong>Agriculture</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(X_T) Entities total (as of 31 XII)</td>
<td>22,4</td>
<td>25,1</td>
</tr>
<tr>
<td>(X_N) Entities newly registered (during the year)</td>
<td>1,3</td>
<td>1,3</td>
</tr>
<tr>
<td>(X_R) Entities removed (during the year)</td>
<td>0,8</td>
<td>1,0</td>
</tr>
<tr>
<td>(X_N - X_R) Difference (the balance)</td>
<td>0,5</td>
<td>0,2</td>
</tr>
<tr>
<td>(X_N/X_R) Quotient</td>
<td>1,6</td>
<td>1,2</td>
</tr>
<tr>
<td><strong>Industry</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(X_T) Entities total (as of 31 XII)</td>
<td>100,4</td>
<td>99,5</td>
</tr>
<tr>
<td>(X_N) Entities newly registered (during the year)</td>
<td>5,2</td>
<td>6,6</td>
</tr>
<tr>
<td>(X_R) Entities removed (during the year)</td>
<td>5,2</td>
<td>6,8</td>
</tr>
<tr>
<td>(X_N - X_R) Difference (the balance)</td>
<td>0,0</td>
<td>-0,2</td>
</tr>
<tr>
<td>(X_N/X_R) Quotient</td>
<td>1,0</td>
<td>1,0</td>
</tr>
<tr>
<td><strong>Construction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(X_T) Entities total (as of 31 XII)</td>
<td>93,1</td>
<td>111,5</td>
</tr>
<tr>
<td>(X_N) Entities newly registered (during the year)</td>
<td>5,1</td>
<td>15,1</td>
</tr>
<tr>
<td>(X_R) Entities removed (during the year)</td>
<td>5,6</td>
<td>7,6</td>
</tr>
<tr>
<td>(X_N - X_R) Difference (the balance)</td>
<td>-0,5</td>
<td>7,5</td>
</tr>
<tr>
<td>(X_N/X_R) Quotient</td>
<td>0,9</td>
<td>2,0</td>
</tr>
<tr>
<td><strong>Service</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(X_T) Entities total (as of 31 XII)</td>
<td>720,9</td>
<td>749,6</td>
</tr>
<tr>
<td>(X_N) Entities newly registered (during the year)</td>
<td>49,5</td>
<td>60,4</td>
</tr>
<tr>
<td>(X_R) Entities removed (during the year)</td>
<td>39,3</td>
<td>48,9</td>
</tr>
<tr>
<td>(X_N - X_R) Difference (the balance)</td>
<td>10,2</td>
<td>11,5</td>
</tr>
<tr>
<td>(X_N/X_R) Quotient</td>
<td>1,3</td>
<td>1,2</td>
</tr>
</tbody>
</table>

Source: Own calculations based on data from CSO and Statistical Office in Wroclaw.
In the analysis of local entrepreneurship monitoring, the indicator of the newly registered businesses (birth of the company) to the de-registered entities (death of the company) in the form of quotient \( \frac{X_N}{X_R} \) can be of particular importance. This indicator is called the final rotation indicator as it in a sense illustrates the tendency of decisions about the choice of the entrepreneurial path or the complete abandonment of that path (Cieślik, J., 2014a, p.93.; 2014b, p.18).

**Graph 1.** Entities newly registered in the REGON register per 10 thous. population. Dolnośląskie Voivodeship on background of the country and other voivodeships

![Graph 1](image1)

Source: Own calculations based on data from CSO and Statistical Office in Wroclaw.

**Graph 2.** Entities removed in the REGON register per 10 thous. population. Dolnośląskie Voivodeship on background of the country and other voivodeships

![Graph 2](image2)

Source: Own calculations based on data from CSO and Statistical Office in Wroclaw.
In the Dolnośląskie Voivodeship, apart from 2005 and 2011, the $X_N/X_R$ quotient was above 1 in the analyzed time range, i.e. the final rotation positively influenced the level of entrepreneurial activity. The highest value of the final turnover indicator occurred in 2010, in which on average there were 174 newly registered entities in the registry (in 2011–89 newly registered).

Graph 3. Difference of indicators: entities newly registered – entities removed in the REGON register per 10 thous. population. Dolnośląskie Voivodeship on background of the country and other voivodeships

Source: Own calculations based on data from CSO and Statistical Office in Wroclaw.

3. Innovation activities of industrial enterprises

The propensity for pro-development activities, entrepreneurs’ activity in the sphere of innovative activities can be attributed to the financial expenditure incurred by these companies for innovative activity in a given reporting year, which included the so-called innovation budget, i.e. all expenditure on product and process innovation – current and investment, incurred on successful work (i.e. completed with innovation) and not completed successfully - continued, discontinued or abandoned before completion\(^4\).

In 2015, 15.3% of industrial enterprises in the Dolnośląskie Voivodeship were involved in innovative activities, slightly higher than in Poland (14.0%). In the group of industrial enterprises, in terms of the percentage of units that recorded expenditure on innovative activity, Dolnośląskie Voivodeship has been consistently, for several years on the 4th place in the country.


<table>
<thead>
<tr>
<th>Specification</th>
<th>Poland</th>
<th>Dolnośląskie Voivodeship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of industrial enterprises which incurred expenditure on innovation activities in total enterprises (in %)</td>
<td>38.9</td>
<td>17.1</td>
</tr>
<tr>
<td>Expenditure on innovation activities in industrial enterprises per capita (in PLN)</td>
<td>375.5</td>
<td>647.6</td>
</tr>
<tr>
<td>Share of industrial innovative enterprises in total enterprises (in %)</td>
<td>51.2</td>
<td>25.8</td>
</tr>
<tr>
<td>Revenues from sales of new or significantly improved products as the share of total revenues from sales (in %)</td>
<td>13.5</td>
<td>12.4</td>
</tr>
</tbody>
</table>

Source: Own calculations based on data from CSO and Statistical Office in Wroclaw.

In the industrial sector, innovation expenditure in Dolnośląskie Voivodeship amounted to PLN 3088 million, representing 9.9% of total outlays on innovative activity in Poland, which gave it 5th place among voivodeships.

The value of expenditure on innovative activity in the group of industrial enterprises increased in the years 2005-2015 by over 2.5 times (on average in the country more than 2 times).

The development of enterprises in the region can be attributed to the value of innovation expenditure in relation to the population. In the case of the Dolnośląskie Voivodeship in the analyzed period, the volume was above the national average. In 2015, the industrial sector accounted for an average of 1063 thousand PLN (which constituted 76.1% of the national average, placing the voivodeship in the 4th place in the country). In 2015, an increase in the disparity between the extreme values of the average expenditure on innovations was observed, which resulted from the high dynamics of growth in the leading voivodeships (mainly in Mazowieckie and Łódź) and slight changes or even a decrease in the value of this ratio in units occupying distant places in the ranking of the Lubuskie Voivodeship.
From the point of view of economic activity, including innovation, it is important that the effectiveness of the activity in the context of benefits to the economy, i.e. the ability of enterprises to carry out the expenditure on measurable effects. In particular, attention has been paid to innovators - companies that have successfully implemented and applied innovation. The economic effects of the innovative activity are reflected in the share of introduced (sold) innovations on the total value of sales.

In the light of the CSO survey results, in 2015 in the Dolnośląskie Voivodeship, the percentage of innovators in the industrial sector who have implemented at least one technical innovation in the three-year period 2013-2015 (new or significantly improved product or new or significantly improved technological process) was 17.1% (compared to 17.6% in the country), placing it in the 10th place in the country (in 2014 Dolnośląskie with a rate of 22.1% was in the 1st place).

Taking into account the last 10 years, there has been a decrease in the share of innovative enterprises in industry, especially in 2008, and in the following years slight changes in the percentage of innovative companies. In the Dolnośląskie Voivodeship, the values recorded in the period 2008-2015 indicate a general downward trend in the percentage of innovators (from 24.7% in 2008 to 17.1% in 2015).

**Graph 4. Expenditure on innovation activities in industrial enterprises per capita (in PLN)).**
Dolnośląskie Voivodeship on background of the country and other voivodeships

Source: Own calculations based on data from CSO and Statistical Office in Wroclaw.
Important information about the impact of product innovation on the overall revenue structure and innovation level of the company is the share of revenues from the sales of new or significantly improved products launched in the past three years in total sales revenue. In the case of the industrial sector, the share of net sales of innovative products introduced in the years 2013-2015 in net revenues from sales in 2015 amounted to 15,0% in total net sales in the Dolnośląskie Voivodeship, resulting in 2 a place among the voivodeships. In the country this figure reached 9,5%. In the analyzed period of time after the accession of Poland to the European Union, in the Dolnośląskie Voivodeship, the share of revenues in the analyzed year from the sale of innovative products has been gradually increasing. Product innovations are increasingly influencing the overall revenue structure and innovation level of the company - the efficiency of innovative activities increases.

**Graph 5.** Share of industrial innovative enterprises in total enterprises (in %). Dolnośląskie Voivodeship on background of the country and other voivodeships

Source: Own calculations based on data from CSO and Statistical Office in Wroclaw.
4. Financial results of economic entities

In light of the results of the CSO reporting in 2016, the companies achieved better financial results than in previous years. The basic economic and financial ratios were at a higher level. The value of revenues from the total activity of the Dolnośląskie enterprises in 2016 amounted to PLN 181.4 billion, representing 6.9% of the total revenue in the country (5th place among voivodeships, after Mazowieckie, Wielkopolska, Śląskie and Małopolskie).

Revenues from the total activity of enterprises in Poland are characterized by a very high degree of spatial concentration (higher than in the case of previously analyzed expenditure on innovative activity). In the country 57.4% of the total volume of revenues came from three voivodeships (Mazowieckie, Śląskie and Wielkopolskie), including 32.4% of the Mazowieckie voivodeship).

Over the last decade, companies in the Dolnośląskie Voivodeship have distinguished themselves with a large dynamics of the size of their revenues. Compared to the situation in 2005, revenues in the Dolnośląskie Voivodeship have increased by more than double, with a significantly faster increase in revenue in the first sub-period (especially until 2008) – an increase of 56.1%, compared to the last one – an increase of 7.6% in 2013-2016.
In the case of the Dolnośląskie Voivodeship the amount of revenues per activity per one reporting company showed a growing trend in the analyzed period, however, it was constantly growing below the national average. In 2016, on average, one company accounted for PLN 131,8 million (which constituted 88,9% of the national average, placing the voivodeship in the 5th place in the country) and in 2005 – PLN 68,3 million (which was 81,0 % of national average; 6th place).

The highest ratios of this indicator have been consistently recorded in the Mazowieckie Voivodeship – PLN 261,2 million in 2016, which is twice as high as in the Dolnośląskie Voivodeship (in 2005 – PLN 184,8 million, i.e. over 2.5 times more).

In order to determine the percentage of profit in enterprises, the value of sales is the same, as the Dolnośląskie companies themselves produce and sell their products against the background of other voivodeships. The gross profit margin ratio (profit margin ratio) is used to illustrate the ratio of gross profit (profit or loss) to income from the total activity. In the case of Dolnośląskie entrepreneurs, this ratio in the whole selected period was slightly better than the average in the country. In the last sub-period, the yield index on sales of products, goods and materials has steadily declined, reaching 5,0% (in comparison with 4,9% the previous year). On the other hand, slightly higher values occurred in the first sub-period until 2007, where gross margin was at 8,3%. Thus, in the first years of EU membership, in the years before the global crisis, lower sales could have been realized to reach a certain amount of profit – higher the efficiency of the outlays and the revenues achieved.

In 2016, the most profitable types of activity with the highest net turnover ratios were information and communication (the rates were 8,7% and 6,8% respectively), other services (8,4% and 7,4% respectively) and professional, scientific and technical activities (8,4% and 7,0%, respectively).

Compared to 2015, the greatest improvement in the net turnover rate was observed in the sections: industrial processing, trade, repair of motor vehicles. The deterioration of profitability of net turnover was recorded, among others, in sections: electricity, gas, steam and hot water supply, accommodation and gastronomy, entertainment and recreation activities, other service activities.

In the Dolnośląskie Voivodeship, as in other voivodeships, the revenues from the total activity of the entities exceeded the costs incurred, hence the total income from the business activity, adjusted for the balance of extraordinary profits and losses, i.e. the gross financial result was maintained at a positive level.

In the area of the Dolnośląskie Voivodeship in 2016, net profit, i.e. a positive financial result, showed 79,9% of the surveyed companies (before 81,2%)
and it was one of the lowest in the voivodships (14th floor before Lubuskie and Mazowieckie). A gradual, gradual increase in the value of this indicator can be attributed to the improvement of the efficiency of the conducted economic activity.


<table>
<thead>
<tr>
<th>Specification</th>
<th>Poland</th>
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<th></th>
<th></th>
<th></th>
<th>Dolnośląskie Voivodeship</th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues from total activity per 1 entity (in thous. PLN)</td>
<td>84 336</td>
<td>108 512</td>
<td>135 457</td>
<td>149 893</td>
<td>68 329</td>
<td>90 613</td>
<td>122 514</td>
<td>131 838</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenues from total activity per capita (in thous. PLN)</td>
<td>34</td>
<td>50</td>
<td>62</td>
<td>68</td>
<td>28</td>
<td>44</td>
<td>58</td>
<td>62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share of entities showing net profits in the number of entities (in %)</td>
<td>76,0</td>
<td>76,7</td>
<td>76,8</td>
<td>81,5</td>
<td>73,4</td>
<td>73,1</td>
<td>74,7</td>
<td>79,9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share of revenues of enterprises showing net profit in total revenues from the whole activity (in %)</td>
<td>85,0</td>
<td>76,3</td>
<td>84,4</td>
<td>85,7</td>
<td>81,9</td>
<td>75,7</td>
<td>79,7</td>
<td>86,5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Own calculations based on data from CSO and Statistical Office in Wroclaw.

**Graph 7.** Revenues from total activity per 1 entety (in thous. PLN). Dolnośląskie Voivodeship on background of the country and other voivodeships

Source: Own calculations based on data from CSO and Statistical Office in Wroclaw.
Unlike the rate of return on sales of products, goods and materials, the percentage of enterprises showing gross profit was lower in the Dolnośląskie Voivodeship (81.5% in 2016). There was no significant variation in the value of this indicator in the voivodeships.

In the Dolnośląskie Voivodeship the consequence of a slight reduction in the percentage of companies showing a net profit was a decrease in the share of their revenues in total revenue from total activity from 87.6% in 2015 to 86.5% in 2016 (in 2005 this share was 81.9%).

Conclusions

In this paper, based on the findings of the CSO research and referring to the concept of European enterprise demography, the development of entrepreneurship in the Dolnośląskie Voivodeship was presented after the accession of Poland to the European Union.

Over the whole period of the analyzed period, the number of entities in the Dolnośląskie Voivodeship per 10 thousand of inhabitants in the REGON register was kept high among the voivodeships.
In general, the number of deregistered entities was lower than the number of newly registered entities (number of candidates for entrepreneurs) and the register of entities registered in the REGON register was positive.

In the analysis of local entrepreneurship monitoring, the indicator expressing the relation of newly registered entities to deregistered ones was of particular importance. The value of this indicator pointed to the growing position of the Dolnośląskie Voivodeship among other voivodeships, which illustrates its greater inclination to choose an entrepreneurial path than to abandon this path.

Privatization activities, entrepreneurs’ activity in the sphere of innovative activities can be attributed to the financial expenditure incurred by these companies for innovation. Dolnośląskie enterprises were distinguished on the background of entities from other voivodeships with a significant level of investment in innovative activity. This situation shows a relatively higher propensity for pro-development activities, especially in the sphere of innovative activities.

Unfortunately, the propensity to invest in innovations in each of the voivodeships decreased considerably during the years under study.

Within the voivodeships, in the analyzed period 2006-2012, there was a large disproportion and a high degree of spatial concentration in the amount of financial outlays for innovative activity - the budget for innovation in enterprises.

The analysis also shows that the strengths of the Dolnośląskie Voivodeship included relatively high share of revenues from the sale of innovative products, which, unlike the whole country, gradually increased its value. Product innovations have increasingly had an impact on the overall revenue structure and the level of enterprise innovation - the efficiency of innovation has increased.

In the light of the results of CSO reporting, companies have been getting better and better financial results. In the Dolnośląskie Voivodeship, as in other voivodeships, the revenues from the total activity of the entities exceeded the costs incurred, hence the total income from the business activity, adjusted for the balance of extraordinary profits and losses, i.e. the gross financial result was maintained at a positive level.

A gradual increase in the percentage of enterprises showing gross profit can be attributed to the improvement of the efficiency of the conducted economic activity.
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Abstract: Comparative evaluation of the most competitive regions within the Visegrad Group is presented, based on the generalised concept of competitiveness which has recently found its application also with respect to regions. At present, the regional policy is considered among key policies of the European Union. This study was conducted on the basis of the EU Regional Competitiveness Index reports as published every three years by the European Commission. Evaluations of regional competitiveness of Polish regions is presented, with specifications of the least and the most competitive ones. Evaluations of fundamental indices are presented, along with effectiveness and innovation indices for Polish regions, with the ultimate purpose of determining the most competitive regions within the Visegrad Group and establishing the sources of their competitive advantage. Results of the study suggest that their competitive advantage has largely been the effect of the effectiveness and innovation of enterprises located in the regions under study.

Keywords: regional competitiveness, the EU Regional Competitiveness Index, innovation, business sophistication, comparative analysis

Introduction

Over the recent years, the European Union has managed to retain the course of dynamic economic development, but not without problems, as attested by the popularity of the term ‘two-speed Europe’ in professional literature. This slogan is not only a reflection of differences between the individual Member States, but also between regions. In line with the present priorities, the central focus of EU policies lies in regions. The cohesion policy of the EU is presently regarded as one of the fundamental policies aimed to provide support for activities addressed to alleviate the economic and social differences across the EU regions. In particular, the EU is focused on reducing the regional disproportions in economic development and on eliminating the economic deficiencies observed in the least-privileged regions and isles, including rural areas. The central objective of the cohesion policy is to stimulate the economic development, competitiveness, and employment in the EU. Development of regions
is strongly influenced by the operation of enterprises, particularly the most innovative ones which exert a marked impact on regional infrastructure, local labour market conditions, and the region’s competitiveness.

The aim of this study is to provide an evaluation of the competitiveness of Polish regions, with identification of the dominant sources of competitiveness observed in the most competitive regions of the Visegrad Group, based on generalised concepts of competitiveness, and regional competitive advantage and methods used in the measurement of these indices. The empirical analysis employed in the study was based on the EU Regional Competitiveness Index reports, as published every three years by the European Commission. The author performed competitiveness evaluations of all regions of Poland over the whole set of applicable indices. This was followed by an evaluation of the most competitive regions of the Visegrad Group with analyses of their dominant sources of competitive advantage.

1. Competitiveness of countries, regions and enterprises

The concept of competitiveness is well-documented, both in domestic and foreign literature. The list of publications on competitiveness includes works of such prominent authors as M.E. Porter (2001), P. Krugman (1994), K. Hughes (1993), J. Ziemiecki and K. Żukrowska (2004), W. Kołodko, L. Balcerowicz. As yet, professional literature has not provides any definite or universally adopted definition of competitiveness. The concept itself is a dynamic and multi-dimensional category (Bieńkowski, 1995). Initially, the concept of competitiveness was applied solely to the operation of enterprises. In time, the term evolved to comprise the levels of whole countries and regions. At least two distinct trends of approach can be found in the present procedures and methods adopted in formal definitions of competitiveness. The first trend, rooted in the theory of exchange, reflects the economic standing and trade results of countries, regions and enterprises in global dimension. Proponents of this approach define competitiveness as the ability to retain or increase one’s share in the market. The other major trend references the economic performance and the theory of economic growth (Porter, 2001, Smuga, 1995). In addition, professional literature provides a wealth of definitions adopted by international organisations such as the World Economic Forum, the International Institute for Management Development, and the European Commission. International bodies are typically involved in competitiveness evaluations of whole countries. The European Commission,
However, has already emphasised the need for measurement of competitiveness of EU regions, in line with the key assumptions of the cohesion policy of the EU that stipulate the obligation to reduce economic and social imbalance across all regions of the EU area (European Commission, 2014).

One of the main problems in the evaluation of the competitiveness phenomenon is the identification and subsequent measurement of specific factors of competitiveness. Proper definition of factors that impact the competitive advantage of regions helps define key factors of economic growth to be used in comparisons, both national and regional, and offers potential for determining the obstacles to development observed in other regions.

<table>
<thead>
<tr>
<th>Basic group</th>
<th>Efficiency group</th>
<th>Innovation group</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Institutions</td>
<td>• Higher Education / Training and Lifelong Learning</td>
<td>• Technological Readiness</td>
</tr>
<tr>
<td>• Macroeconomic Stability</td>
<td>• Labour Market Efficiency</td>
<td>• Business Sophistication</td>
</tr>
<tr>
<td>• Infrastructure</td>
<td>• Market Size</td>
<td>• Innovation</td>
</tr>
<tr>
<td>• Health</td>
<td></td>
<td></td>
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<tr>
<td>• Basic Education</td>
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</tbody>
</table>

**Fig. 1.** Indeks Konkurencyjności Regionów w 2016 roku


At present, competitiveness of countries is formally evaluated in two global reports: the *Global Competitiveness Report* published by the World Economic Forum (WEF) and the *World Competitiveness Yearbook – WCY* published by the International Institute for Management Development in (IMD). In the European Union, the first EU ranking of competitiveness has been introduced in 2010 by the European Commission, in the form of the *Regional Competitiveness Index* and published every three years. At present, three editions of this reports are available, for the years 2010, 2013, and 2016. The reports are produced by the Directorate-General for Regional and Urban Policy in cooperation with the EC Joint Research Centre (Annoni, Kozovska, 2010). The index is designed to monitor, evaluate and compare the development of
regions. Initially, the authors of the RCI index had adopted the approach by J. Meyer-Stamer defining competitiveness as “the ability of a locality or region to generate high and rising income and improve the livelihoods of the people living there” (Meyer-Stamer, 2008). The latest report adopts and updated definition of regional competitiveness as “the ability of a region to offer an attractive and sustainable environment for firms and residents to live and work (Annoni, Dijkstra, Gargano, 2017).

The RCI index is based on examinations of eleven indices categorised in three groups. The fundamental sub-indices group (Basic dimension) includes: institutions, macroeconomic stability, infrastructure, health, basic education – these represent the most elementary indices of regional growth or measures of the continuous economic development and competitiveness. The second group (Efficiency dimension) includes sub-indices of economic effectiveness, reflecting higher education and lifelong learning, labour market efficiency, and market size. The most demanding sub-indices are grouped in the last category (Innovation dimension), to reflect the level of innovation, technological readiness, and business sophistication. It must be noted at this point that two of the sub-indices – macroeconomic stability and basic education – are measured at the country level, while the remaining ones reflect the regional level.

The regional competitive index (RCI) can be represented as follows (Benzaquen, Alfonso del Carpio, Zagarra, Valdivia, 2010):

\[
RCI = \frac{\sum_{k=1}^{l} \text{Pillar}_k}{l}
\]

where the RCI is the average of the \(l\) pillars comprising it, and in which each pillar (\(\text{Pillar}_k\)) is represented by the average of the \(m\) factors comprising it.

\[
\text{Filar}_k = \frac{\sum_{j=1}^{m} F_j}{m}
\]

The factor (\(F_j\)) is the sum total of the \(n\) variables comprising it, weighted by

\[
F_j = \sum_{i=1}^{n} V_i P_i
\]

In other words, a factor (\(F_j\)), where (\(V_i\) is variable \(i\), and (\(P_i\) represents the weight of the variable \(i\).

The RCI design adopts different weights to individual sub-indices, depending on the region’s per capita GDP. The effectiveness dimension indices are assigned 0.5
weight, regardless of the actual regional level of development. For the basic dimension sub-index, the weights are decreased in proportion to the regions’ *per capita* GDP increase, while those of the innovation dimension are increased. For the year 2016, the RCI index for EU regions reached min-max values from 1.496 (minimum) to 1.214 (maximum) (P. Annoni, L. Dijkstra, N. Gargano, 2017)

2. **Competitiveness of Polish regions**

It must be noted at this point that the Regional Competitiveness Index (RCI) formed at the initiative of the European Commission differs distinctly from other reports produced by international organisations such as WEF and IMD in that it attempts to analyse the development and competitiveness or regions, and not only countries. The RCI report formula designed by the EC includes reports on the competitiveness of EU regions at the NUTS 2 (*Nomenclature des Unités territoriales statistiques*) level. Fig. 2 below presents data from the 2016 edition of the RCI.

In the above chart, the most competitive regions of the EU area are marked dark green, and the least competitive ones are represented by dark purple. Regional indices take on positive values for competitive regions, and negative values for non-competitive regions of the EU. The most competitive regions of the area are located in Great Britain, Germany, Benelux countries, and Scandinavia. The least competitive regions of the EU are situated in Romania, Bulgaria, and Greece.

Poland is segmented into 16 regions, corresponding with the present structure of Polish voivodships. Among them, the only region ranked on the fourth level of development is the Mazovian voivodship (Mazowieckie), with the score of 107.5% of the average EU *per capita* GDP. The next rank in terms of *per capita* GDP is occupied by the Lower Silesia region (Dolnośląskie), ranked at the third level of development. It may be worthy of noting that the difference between the first and the second place in the ranking is as high as 32%. The lowest scores were registered for Warmińsko-Mazurskie, with the score of only 47.8% of the EU *per capita* GDP average, and less than half that of the *per capita* GDP in Mazowieckie region. Mazowieckie, as home of Warsaw municipality, has attracted the highest volumes of investment over the recent years, and is considered to be the national centre of economic growth.
Fig. 2. Indeks Konkurencyjności Regionów w 2016 roku
Over the recent years, Poland has become an attractive target for foreign investment, mostly due to the infrastructural improvements, skilled workforce and the size of the domestic market. Polish regions belong in the group of the most dynamically developing regions of the EU area, but are still well behind the most affluent regions of the Western Europe in terms of per capita product – these differences remain fairly significant.
### Polske regiony NUTS 2 – RCI 2016

<table>
<thead>
<tr>
<th>NUTS 2 NAME</th>
<th>Basic sub-index</th>
<th>Efficiency sub-index</th>
<th>Innovation sub-index</th>
<th>RCI 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>z-score</td>
<td>min-max</td>
<td>rank</td>
<td>z-score</td>
</tr>
<tr>
<td>Łódzkie</td>
<td>-0,43</td>
<td>46,90</td>
<td>205</td>
<td>-0,34</td>
</tr>
<tr>
<td>Mazowieckie</td>
<td>-0,32</td>
<td>51,18</td>
<td>186</td>
<td>0,09</td>
</tr>
<tr>
<td>Malopolskie</td>
<td>-0,26</td>
<td>53,63</td>
<td>170</td>
<td>-0,22</td>
</tr>
<tr>
<td>Śląskie</td>
<td>-0,32</td>
<td>51,30</td>
<td>185</td>
<td>-0,10</td>
</tr>
<tr>
<td>Lubelskie</td>
<td>-0,47</td>
<td>45,54</td>
<td>208</td>
<td>-0,51</td>
</tr>
<tr>
<td>Podkarpackie</td>
<td>-0,39</td>
<td>48,49</td>
<td>197</td>
<td>-0,67</td>
</tr>
<tr>
<td>Świętokrzyskie</td>
<td>-0,43</td>
<td>47,10</td>
<td>202</td>
<td>-0,46</td>
</tr>
<tr>
<td>Podlaskie</td>
<td>-0,39</td>
<td>48,61</td>
<td>196</td>
<td>-0,76</td>
</tr>
<tr>
<td>Wielkopolskie</td>
<td>-0,34</td>
<td>50,61</td>
<td>188</td>
<td>-0,46</td>
</tr>
<tr>
<td>Zachodniopomorskie</td>
<td>-0,41</td>
<td>47,99</td>
<td>198</td>
<td>-0,57</td>
</tr>
<tr>
<td>Lubuskie</td>
<td>-0,41</td>
<td>47,74</td>
<td>199</td>
<td>-0,62</td>
</tr>
<tr>
<td>Dolnośląskie</td>
<td>-0,43</td>
<td>46,84</td>
<td>205</td>
<td>-0,32</td>
</tr>
<tr>
<td>Opolskie</td>
<td>-0,33</td>
<td>50,98</td>
<td>187</td>
<td>-0,70</td>
</tr>
<tr>
<td>Kujawsko-Pomorskie</td>
<td>-0,42</td>
<td>47,55</td>
<td>200</td>
<td>-0,67</td>
</tr>
<tr>
<td>Warmińsko-Mazurskie</td>
<td>-0,43</td>
<td>47,20</td>
<td>202</td>
<td>-0,74</td>
</tr>
<tr>
<td>Pomorskie</td>
<td>-0,35</td>
<td>50,18</td>
<td>190</td>
<td>-0,36</td>
</tr>
<tr>
<td>Average</td>
<td>-0,38</td>
<td>48,86</td>
<td>195</td>
<td>-0,46</td>
</tr>
</tbody>
</table>


The most competitive region of Poland – Mazowieckie – placed as low as 150 of the total 263 regions of the EU examined by the RCI report, followed by Śląskie, Małopolskie and Dolnośląskie. The lowest ranking was found for Warmińsko-Mazurskie region, placing at 215 position in the RCI ranking. Polish regions receive the highest ratings in the effectiveness sub-indices, with Mazowieckie placing at 122 in the effectiveness ranking. The lowest scores for Polish regions were found in the innovation sub-indices, with an average
for Poland ranked at position 225. The only exception to the above is the Mazowieckie region, with innovation sub-scores higher than those in the basic dimension sub-index.

![Graph showing regional competitiveness](image)

**Fig. 3. Indeks Konkurencyjności Regionów w 2016 roku**


There are large differences between the best- and lowest-scoring regions in Poland, mostly in the pillars of: innovation, business sophistication, and infrastructure. It should also be noted that the top-scoring region of Poland received above-the-EU-average scores in many categories, such as: higher education, market effectiveness, and innovation.

### 3. Sources of competitive advantage for regions of the V4 group

The V4 area is a grouping of countries with largely similar qualities in terms of their history, culture, and geography. This part of the study aims to identify the most competitive region of the Visegrad Group. Based on the scores published in the RCI (2016), the most competitive region in the Czech Republic was the Praha (Prague) region; for Hungary, it was Közép-Magyarország; for Poland, the already discussed region Mazowieckie; and for Slovakia – the region of Bratislavský kraj. It may be interesting to note that all of the above represent
areas around the respective state capitals this holds true for all the countries of the V4 group.

Among the top-scoring regions, the highest ranking was scored by Bratislavský kraj region in Slovakia. It may be useful to note that the region scored as high as 58 in the innovation sub-index. Czech region of Praha scored second, ranking at position 102. Similarly to the Slovakian counterpart, Praha received a high score in innovation. Mazowieckie placed third (at 150), closely followed by Közép-Magyarország (at 152). It should also be noted that the Slovakia region, despite high scores in innovation (58) and effectiveness (53), ranked decidedly lower in the basic dimension sub-index – as low as 210. For the Czech Republic and for Poland, this aspect received much higher rating: 146 and 186, respectively.

**Tab. 3. Najbardziej konkurencyjne regiony dla krajów V4 - NUTS 2 – RCI 2016**

<table>
<thead>
<tr>
<th>Country code</th>
<th>CZ</th>
<th>HU</th>
<th>PL</th>
<th>SK</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Country name</strong></td>
<td>Czech Republic</td>
<td>Hungary</td>
<td>Poland</td>
<td>Slovakia</td>
</tr>
<tr>
<td><strong>NUTS CODE 2013</strong></td>
<td>CZ01</td>
<td>HU10</td>
<td>PL12</td>
<td>SK01</td>
</tr>
<tr>
<td><strong>NUTS NAME</strong></td>
<td>Praha</td>
<td>Közép-Magyarország</td>
<td>Mazowieckie</td>
<td>Bratislavský kraj</td>
</tr>
<tr>
<td><strong>Basic sub-index</strong></td>
<td>z-scores</td>
<td>-0,10</td>
<td>-0,76</td>
<td>-0,32</td>
</tr>
<tr>
<td></td>
<td>min-max scores</td>
<td>59,62</td>
<td>34,44</td>
<td>51,18</td>
</tr>
<tr>
<td></td>
<td>rank</td>
<td>146</td>
<td>223</td>
<td>186</td>
</tr>
<tr>
<td><strong>Efficiency sub-index</strong></td>
<td>z-scores</td>
<td>0,27</td>
<td>-0,08</td>
<td>0,09</td>
</tr>
<tr>
<td></td>
<td>min-max scores</td>
<td>69,83</td>
<td>60,85</td>
<td>65,25</td>
</tr>
<tr>
<td></td>
<td>rank</td>
<td>93</td>
<td>145</td>
<td>122</td>
</tr>
<tr>
<td><strong>Innovation sub-index</strong></td>
<td>z-scores</td>
<td>0,48</td>
<td>0,21</td>
<td>-0,37</td>
</tr>
<tr>
<td></td>
<td>min-max scores</td>
<td>64,26</td>
<td>56,63</td>
<td>40,35</td>
</tr>
<tr>
<td></td>
<td>rank</td>
<td>62</td>
<td>110</td>
<td>164</td>
</tr>
<tr>
<td><strong>RCI 2016</strong></td>
<td>z-scores</td>
<td>0,26</td>
<td>-0,17</td>
<td>-0,13</td>
</tr>
<tr>
<td></td>
<td>min-max scores</td>
<td>64,69</td>
<td>49,09</td>
<td>50,49</td>
</tr>
<tr>
<td></td>
<td>rank</td>
<td>102</td>
<td>152</td>
<td>150</td>
</tr>
</tbody>
</table>

However, both the Bratislavský kraj and Praha regions deserve due recognition in that the innovation dimension represents the highest potential for regional competitive increase. Table 4 presents the individual categories analysed within the innovation sub-index. Three groups if indices are identified: technological readiness, business sophistication, and innovation. The first group is a ranking of ‘information society’ advancement, based on reports of Internet access, broadband access, and e-commerce. All the regions under study represent areas of advanced information society. Internet and broadband access is ranked highest in Praha region, and e-commerce receives best scores in Bratislavský kraj.

The second group of indices examines business sophistication and applies to specialised sectors of advanced economies, namely those classified between K and N in the NACE standard of classification. These sectors include, among others, finance, real estate, and scientific research. In addition, the business sophistication index examines innovative cooperation in the SME segment of the economy. Highest employment scores in specialised segments were found for the Bratislavský kraj region. However, those scores do not seem to translate into effectiveness. For instance, the Mazowieckie region, at 15% employment, produces as much as 23% of added value, while Bratislavský kraj – with the highest employment score of 25%, produces as little as 27.5% of added value. The largest number of innovative practices of cooperation between SME and other segments were found in Praha region.

The technological index group examines, among other things, numbers of patents granted, R&D expenditure volumes, and the export of mid-high and high tech products. The Hungarian region of Közép-Magyarország is the leader with respect to patents, including those in high-tech and ICT. R&D expenditures were highest in Praha region, at 2.15% GDP, compared to the score of 1.46% in Mazowieckie. Employment in technology sectors was highest in Slovakian Bratislavský kraj, closely followed by the Hungarian region. Shares in high and mid-high tech product export were low for all the regions under examination.
**Tab. 4. Najbardziej konkurencyjne regiony dla krajów V4 - NUTS 2 – RCI 2016 – Sub- index innowacyjności**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Czech Republic</th>
<th>Hungary</th>
<th>Poland</th>
<th>Slovakia</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3 – Tech readiness</td>
<td>CZ01</td>
<td>HU10</td>
<td>PL12</td>
<td>SK01</td>
</tr>
<tr>
<td>4-6 – Business Sophistication</td>
<td>CZ00</td>
<td>HU10</td>
<td>PL12</td>
<td>SK01</td>
</tr>
<tr>
<td>7-16 – Innovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Praha</td>
<td>Közép-Magyarország</td>
<td>Mazowieckie</td>
<td>Bratislavský kraj</td>
</tr>
<tr>
<td>1. Households access to broadband (% of total households with access to broadband)</td>
<td>83,67</td>
<td>81,50</td>
<td>71,50</td>
<td>78,00</td>
</tr>
<tr>
<td>2. Individuals buying over internet (% of individuals who ordered goods or services over the internet for private use)</td>
<td>47,75</td>
<td>36,50</td>
<td>39,50</td>
<td>55,00</td>
</tr>
<tr>
<td>3. Households access to internet (% of total households with internet access)</td>
<td>84,94</td>
<td>82,00</td>
<td>76,00</td>
<td>80,50</td>
</tr>
<tr>
<td>4. Employment, K-N sector (NACE) (employment in the &quot;Financial, real estate, professional, scientific and support activities&quot; sectors (K-N) as % of total employment)</td>
<td>16,27</td>
<td>18,12</td>
<td>14,56</td>
<td>24,61</td>
</tr>
<tr>
<td>5. GVA, K-N sector (NACE) (GVA in the &quot;Financial, real estate, professional, scientific and support activities&quot; sectors (K-N) as % of total GVA)</td>
<td>25,21</td>
<td>27,97</td>
<td>23,23</td>
<td>27,67</td>
</tr>
<tr>
<td>6. Innovative SMEs collaborating with others (Number of SMEs with innovation co-operation activities, that is that have had any cooperation agreements on innovation activities with other enterprises/institutions (expressed as a % of total SMEs))</td>
<td>0,40</td>
<td>0,23</td>
<td>0,14</td>
<td>0,30</td>
</tr>
<tr>
<td>7. Total patent applications (number of applications per million inhabitants)</td>
<td>23,87</td>
<td>43,84</td>
<td>19,42</td>
<td>20,80</td>
</tr>
<tr>
<td>8. Core creative class employment (% of population aged 15-64)</td>
<td>11,65</td>
<td>10,55</td>
<td>10,90</td>
<td>10,32</td>
</tr>
<tr>
<td>9. Knowledge workers (knowledge workers as % out of total employment)</td>
<td>47,64</td>
<td>47,61</td>
<td>44,89</td>
<td>53,83</td>
</tr>
<tr>
<td>10. Scientific publications (# of Scientific Publications per million inhabitants (average 2008-2010))</td>
<td>3528,38</td>
<td>1916,26</td>
<td>1522,51</td>
<td>4656,01</td>
</tr>
<tr>
<td>11. Total intramural R&amp;D expenditure (total R&amp;D expenditure as % of GDP)</td>
<td>2,15</td>
<td>1,70</td>
<td>1,46</td>
<td>1,64</td>
</tr>
<tr>
<td>12. Human Resources in Science and Technology (persons with higher education and/or employed in Science and Technology as % labor force)</td>
<td>47,02</td>
<td>47,55</td>
<td>47,80</td>
<td>47,15</td>
</tr>
<tr>
<td>13. Employment in technology and knowledge-intensive sectors (as of % total employment)</td>
<td>6,96</td>
<td>8,30</td>
<td>5,80</td>
<td>8,40</td>
</tr>
<tr>
<td>14. High-tech-inventors (High Technology EPO patent applications, number of applications per million inhabitants)</td>
<td>3,17</td>
<td>13,98</td>
<td>3,94</td>
<td>3,26</td>
</tr>
<tr>
<td>15. ICT inventors (ICT EPO patent applications, number of applications per million inhabitants)</td>
<td>5,83</td>
<td>16,33</td>
<td>4,86</td>
<td>8,38</td>
</tr>
</tbody>
</table>
16. Exports in medium-high/high tech manufacturing (Exports in medium/high technology products as a share of total product exports: measures the technological competitiveness of the EU, the ability to commercialise the results of research and development (R&D))

<table>
<thead>
<tr>
<th></th>
<th>CZ</th>
<th>HU</th>
<th>PL</th>
<th>SK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>0.73</td>
<td>0.70</td>
<td>0.51</td>
<td>0.84</td>
</tr>
</tbody>
</table>


Conclusions

Competitiveness of regions in the European Union is widely varied; the differences are particularly evident with respect to regional policies which are, after all, aimed at reducing any such differences within the EU area. Results of analytical evaluations presented herein suggest that the most competitive region in Poland is the district region of Mazowieckie, with Warmińsko-Mazurskie placing at the opposite end of the spectrum. Mazowieckie is also the only region in Poland to be ranked at the fourth level of development, with above-EU-average per capita GDP. Lastly, Polish regions belong in the group of the most dynamically developing areas in Europe, due to continuous infrastructural improvements, skilled workforce, and low cost of economic operation. However, differences between the most affluent regions of the EU and their Polish counterparts are still quite pronounced. Polish regions receive best scores in the effectiveness dimension, while their innovation indices remain low. In order to improve the competitiveness of Polish regions, it may be necessary to stimulate a sizeable increase in R&D expenditure, patent applications, and employment in the high-tech, mid-high tech and ICT sectors.

To identify the most competitive region of the V4 (Visegrad) group, the author examined regions which received top scores in the 2016 edition of the EU Regional Index of Competitiveness in each of the countries under study. The Slovak region of Bratislavský kraj proved to be the most competitive region of the group (position 96 in the RCI ranking), followed by the Czech region of Praha (position 102), with Polish region of Mazowieckie ranked third (position 150), and Hungarian region of Közép-Magyarország ranked fourth (position 152). Interestingly enough, the most competitive regions of V4 are, without exception, located around state capitals.

Since innovation seems to be the most important factor in improving regional competitiveness, the author performed a detailed analysis of the regions’ scores in the innovation sub-index. All of the regions under examination showed signs of advanced information society status. The highest scores in business sophistication were received by Bratislavský kraj. However, those scores do not seem to translate into regional effectiveness. The highest number of innovative cooperation agree-
ments between SMEs and other segments of the economy were found in Praha. The Hungarian region of Közép-Magyarország was the leader in the number of patents granted, including those in high-tech and ICT. R&D expenditure levels were highest in Praha region. The highest level of employment in technology sectors was found in Slovakia’s Bratislavský kraj, closely followed by the Hungarian region. The share in high and mid-high tech export was low for each of the regions under examination. Analyses of all indices included in the innovation dimension show that Mazowieckie region received the lowest scores in most of the categories. The remaining regions seem to present a more cohesive approach to competitiveness improvement by specialising in various activities that stimulate the rise of their innovation sub-index.

REFERENCES

Krugman, P., 1994, Competitiveness: A Dangerous Obsesion, Foreign Affairs, Vol. 73 No. 2, s.28 oraz The Fight over Competitiveness, Foreign Affairs, Vol. 73 No. 4, s. 186-203.
Determinants of entrepreneurship in the region of sub-Saharan Africa. The role of productivity and development of financial markets

Abstract: Entrepreneurship is claimed an important factor for economic development in sub-Saharan Africa. Until now majority of population is employed in agriculture and their productivity is presumed too low to enhance structural changes. Likewise, majority of entrepreneurs are micro and small rural entities, often operating in informal sector. In this study a one-step dynamic panel model with GMM-SYS was applied in order to examine the impact of productivity and financial development on entrepreneurship in 19 sub-Saharan African countries over a period 2003-2014. In both cases positive and significant impact was found. The policies which promote productivity and rise of financial services are expected to stimulate entrepreneurship. Further, the results of the study suggest, that large companies which are minority in the region are engaged in most productive activities. Also, active policies aimed at increasing skills and education of entrepreneurs are indispensable to promote private sector in order to fill in the gap in entrepreneurial abilities between the region and the World average.

Keywords: entrepreneurship, sub-Saharan Africa, economic development, productivity

JEL: O16, O20

1. Introduction

Entrepreneurship is an important element in the development of any organisation, including the state. It is indicated that the initial research on entrepreneurship as approached by economics can be associated with Cantillon, who analysed the role and risk of entrepreneurs’ activities in the economy and used them for creating his own theory of economics in his collection of essays Essai sur la nature du commerce en general, which was published posthumously (Cantillon 2011 [1755], Ahmad and Hoffman 2007, Brown and Thornton 2013). For Schumpeter (2005), the entrepreneur was an agent, or a carrier of the mechanism of change resulting from his or her innovativeness. However, the role of entrepreneurship in stimulating economic growth and productiv-
ity had not gained in significance as part of the mainstream economic debate until the mid-1990s, when scholars began to refer, among others, to Cantillon and Schumpeter (Audretsch et al. 2002, Ahmad and Hoffman 2007). Earlier, entrepreneurship had been treated merely as a factor ensuring employment and stabilisation in the economy (small business owners were supposed to disappear as a consequence of development of large corporations) (Audretsch et al. 2002). When, however, the results of econometric research started to confirm the existence of the relation of entrepreneurship and the private sector with innovation and competitiveness, this contributed to more in-depth research on entrepreneurship as part of economics (Audretsch et al. 2002).

It is assumed here that entrepreneurship has two basic meanings: individualised and internal, comprising a set of characteristics determining the inclination and predisposition to commencement and pursuit of an economic activity (Schumpeter 2002), and external, expressing the quantity of operating entrepreneurs. From the viewpoint of countries and regions treated as organisations, entrepreneurship is usually expressed by the presence (e.g. establishment, survival) of private enterprises on the market, which is a feature of a given economy. Therefore, entrepreneurship is promoted through both removal of barriers and directional operations aimed as an encouragement for starting an economic activity. Theoretically, the entrepreneurship level can be perceived from the angle of demand (product market, market efficiency) or supply (labour market), i.e. push and pull factors (Audretsch et al. 2002). Examination of entrepreneurship can concern also various levels of analysis, including micro, meso, and macro ones. The macro research on entrepreneurship focuses on environmental, economic, social, cultural, and regulatory factors which might influence entrepreneurship.

The notion of entrepreneurship itself is difficult to define, and – essentially – to quantify, by nature; various methods of measuring, i.e. expressing the entrepreneurship level, are applied. The term ‘entrepreneurship’ is used in this text with reference to the phenomenon characterising the domestic economy and it is assumed here that entrepreneurship is expressed by the quantity of enterprises registered in a given country (Cf. Adusei 2016). From this perspective, this notion clearly corresponds to the semantically related “private sector development” (although it is not identified with it). Other methods of quantitative expression of entrepreneurship depending on and in alignment with the taken up research issues can also be found in the relevant literature. For instance, the number of small and medium enterprises or the number of entrepreneurs and characteristics can be indicated (Ahmad and Hoffman
The lack of standardised principles and definitions hampers comparisons of the obtained results of research between countries and regions. The issue concerns mainly regions such as sub-Saharan Africa, for which availability and reliability of data remains a fundamental problem for researchers.

From the viewpoint of development of African states, entrepreneurship is crucial. Adusei (2016) points to its positive influence on the region’s economic growth. Entrepreneurship, by improving the quality of life, particularly in rural areas, has the potential to contribute to eliminating the problem of knowledge and solving infrastructural problems (Brixova 2010). The present level of entrepreneurship as well as the size and development level of the private sector do not meet the expectations placed on them. As shown by the data of the African Development Bank, employment in family farms, which are characterised by low productivity, have still prevailed in sub-Saharan Africa (AfDB, 2015). The mining sector, which has benefited from the super cycle of raw materials over the past fifteen years, employs merely circa 9% of the region’s population. This means that a considerable portion of the society have had no access to the revenue generated owing to the global economic situation. Employment structures have not been subject to clear and expected changes after 2000; at the same time, however, the increasing presence of transnational corporations, such as Coca Cola in countries with the lowest income, might positively contribute to stimulation of entrepreneurship and improvement of the quality of the production activity through inclusion of local manufacturers in global value chains.

As reported by The Guardian (2017), despite the announced – e.g. by the USA – reduction of the development assistance volume, which will translate into a decreased capital inflow to the region, it is business that will contribute to the economic development in the sub-Saharan region in the coming years. Hence, reinforcing the significance of entrepreneurs and, primarily, improving their efficiency, is a crucial element of the development strategy in the region. From the viewpoint of the region, it is necessary to, first of all, enhance the technology use potential. Significant growth and accelerated development of communication and information technologies have been noticeable to date (Lehman 2015). Development of cashless payments using mobile services is visible in certain countries of the region (e.g. Kenya, Tanzania, Ghana). A high poten-

Ahmad and Hofmann (2007) propose that entrepreneurship be measured in 3 dimensions: enterprises, employment, wealth. Each of them is expressed with many measures, e.g. (1) registered enterprises, enterprise survival rates after 3 and 5 years, share of survival rates after 3 and 5 years; (2) enterprises measured with employment growth, characteristics of business owners; (3) enterprises measured with turnover growth, added value of young enterprises, productivity of enterprises, innovation of enterprises.
tial for developing and adopting new technologies lies in demographic conditions. Ojega (2015) notes that innovation capabilities of young people will constitute an important element of the region’s growth in the years to come.

The issues of entrepreneurship in the literature dedicated to the sub-Saharan region is often taken up in the context of individual countries and sectors (i.a. Uctu and Jafta 2014, Toerien 2017, Urban 2016, Brixiova, Ncube, and Zorobabel 2015). They fall into the stream of the research by the so-called randomistas, who concentrate on case analysis (Duflo, Kremer and Robinson 2009, Ravaillon 2009). This arises partly from insufficiency of statistical data allowing regional research and partly from a change of the attitude towards the issue of evaluating development policies. For example, Nega and Schneider (2014) emphasise the role of social entrepreneurship in solving problems from the micro perspective in the African region. A majority of studies focus on tangible and intangible resources and mechanisms which constitute potential threats to the development of the private sector, pointing to legal barriers, access to capital, access to B2B services, level of human capital, structures of economies, etc. However, entrepreneurship in the region is affected not only by infrastructural and institutional, but also social and cultural, considerations (Grimm, et al. 2013). Some studies concentrate on entrepreneurship of groups at risk of social exclusion, including young people and women (i.a. Langevang and Gough 2012; Ojeaga 2015; Adom 2015; Vivence and Visser 2016). A salient aspect regarding entrepreneurship stimulation has been also, in particular in recent years, the effect of the diaspora’s activities reflected, among others, by growth in the volume of private remittances (Kshetri, Nir. 2013).

The purpose of this study is to present and explain the role of entrepreneurship in the development of sub-Saharan Africa and identify its growth factors. Therefore, the characteristics of the private sector in Africa were identified in the context of reports found in the relevant literature and based on quantitative and qualitative data available for Africa at the first stage of the research. Comparative and system analysis methods as well as basic descriptive statistics tools and correlations were used. Afterwards, determinants of entrepreneurship in the region were examined with the two-level dynamic model by means of the generalised method of moments (GMM). A hypothesis providing for the necessary to implement policies aimed to win greater favour of the business environment, and in particular striving for higher productivity and development of the sector of financial services as determinants of entrepreneurship development, in sub-Saharan Africa was posed. The obtained results confirm the adopted assumptions. Moreover, a positive effect of human capital on entrepreneurship in the region was found.
2. Characteristics of the private sector in sub-Saharan Africa

2.1. The private sector of sub-Saharan Africa in economic research

The private sector in sub-Saharan Africa is dominated by small farms. It is perceived as a source of employment especially for the growing population of young people, which arises, in the first place, from the limited number of jobs in the public sector (Langevang and Gough 2012). Non-farm enterprises based on households generate circa 22% of the total employment (AfDB, 2015). What is of particular significance is self-employment, yet its considerable portion remains in the informal sector, i.e. the so-called black economy. The notable size of the informal sector is an important characteristic and, at the same time, a factor of economic activity’s effectiveness. The informal sector in the region is less efficient than the formal one. It is estimated that a working person works merely a few hours a day, in particular in family businesses. It is the size of the informal sector that is among the explanations for the fact that economic growth does not translate into elimination of poverty and social exclusion (AfDB, 2015).

Munemo (2012) indicates that, in comparison to other regions, entrepreneurship measured with the number of registered enterprises remains lower in Africa than in other regions of countries generating low and middle income. Simultaneously, the establishment of new enterprises in Africa is more sensitive to formal barriers and political stability than in other regions. Lago (2014) makes a similar statement and stresses the adverse consequences of the phenomenon of corruption in business relations in the region. Munemo (2012) poses a thesis on the specificity of the African continent in comparison to other regions and emphasises the crucial role of political reforms in stimulating the private sector. These theses fit into other studies which point to distinctness of Africa from Asia in terms of democratisation and economic development relations (Fosu and O’Connell 2006, Fosu 2013).

Stimulation of growth and structural transformation in Africa requires increased productivity of the private sector, which would contribute to a higher number of jobs in countries with low income (Brixova 2010). Poor efficiency of enterprises is a major problem in the sub-Saharan region. Some labour forces have migrated for their own purposes from the still prevalent sector of agriculture to low-productive services in urban agglomerations (Rodrik 2014). The

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2 Overall, according to the World Bank’s data, circa 60% of the region’s population are employed in agriculture.
shifts of labour resources to high-productive and capital-intensive jobs observable to date are not sufficient from the viewpoint of structural transformation of economies. The market deficiencies arising from infrastructural backwardness and lack of effective institutional mechanisms put African entrepreneurs in a position that is unfavourable in comparison to competitors from other regions of the world who pursue their economic activities in a more advantageous environment. This is confirmed by numerous qualitative researches (e.g. Global Competitiveness Index, Doing Business), the results of which place the countries of the region behind other regions.

Some studies are dedicated to analysing the possibilities of entrepreneurship development in sub-Saharan Africa with the impact of endogenous and exogenous factors resulting from the development of tangible and intangible factors, including in particular institutions, taken into consideration. The diaspora, which is gaining in economic strength and which creates networks of cooperation and communication as well as support mechanisms for the private sector in the country of origin, is of major significance (Kshetri 2013). Munemo (2015) indicates the potential benefits coming from registering foreign entities as part of direct foreign investments consisting in dissemination of new ideas, skills, knowledge, and, in consequence, increase in efficiency. However, the researcher notes that the regulations regarding establishment of an economic activity are crucial here: the lower the regulation level, the more the presence of foreign enterprises attracts the activity of local entrepreneurs.

Research shows that it is necessary for the state to support entrepreneurship in the sub-Saharan region since the market is incapable of solving the problems and eliminating the barriers to the development of the private sector (Brixova 2010). External agents, including bilateral and multilateral aid donors, also provide help. Numerous development aid programmes support entrepreneurship as part of an extensive initiative for taking actions at grass roots level (Briere et al. 2015, Dolan and Rajak 2016). Briere et al. (2015) emphasise that such projects might bring the expected effects provided that certain conditions are satisfied. Firstly, they must transpose the northern business model to southern circumstances as well as develop based on local roots and adapt to local conditions. Moreover, it is important to maintain balance in allocating resources between

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3 The research by Langevang and Gough (2012) cover the activities of young women in hairdressing and tailoring services in Ghana. They point to the phenomenon of divergence between these two occupations arising, among other, from the global environment, progress, specialisation, transformations of both industries, the issue of training, and individual consumer expectations. While the former market is developing very well, the latter one has experienced stagnation resulting from the external factors leading to clear differences between the activities.
project management and service provision to entrepreneurs. It is also crucial to make an attempt to reconcile the local culture and the donor’s agency. Gantsho and Karani (2007) indicate that the institutions financing development, when oriented towards specific channels of activity, e.g. the use of clean energy, might help entrepreneurs create mechanisms for adapting and learning by offering innovative financing instruments as incentives. When executing such projects, the financing institutions support enterprises technically in creating the plan and strategy for implementing specific solutions.

In the 21st century, the activity of emerging economies of the South has particularly enhanced in the African continent, including China. The presence of the capital from the South is a development factor and at the same time influences the characteristics of the private sector in the sub-Saharan region. Beginning with long-term loans to Angola, China has found an entry to other African markets becoming a donor of development aid that is not registered by OECD on the one hand and a public and private investor on the other hand. It operates virtually all over the continent (excluding the countries recognising Taiwan, i.e. Burkina Faso and Swaziland). Gu 2009 and Shen 2012 conducted research on the characteristics and influence of Chinese entrepreneurs in Africa. Foreign enterprises offer relatively more, although less qualified, jobs. At the same time, however, foreign enterprises offer more attractive earnings (Coniglio et al., 2014). A clear difference between foreign employers is visible along the North-South line: employers from the North offer higher earnings, while those from the South employ less qualified staff. Coniglio et al. (2014) stated also that Chinese enterprises ceteris paribus employ more unqualified labour force but, in comparison to domestic and other foreign employers, pay less to both qualified and unqualified staff. The observations made during field research and interviews carried out as its part (Senegal, Rep. Konga, WKS) confirm the quoted results of quantitative research (Andrzejczak, 2017). Hence, it can be assumed that the environment facilitating the existence of more efficient enterprises will have a positive effect on establishment of new ones.

What deserves a special mention among internal factors is the market development level. There is a limited number of suppliers, service providers and qualified specialists (Watkins and Ehst 2008, Andrzejczak 2014) in the sub-Saharan region, which involves the necessity to use more expensive foreign entities or restricts access to specific goods and business services (e.g. transport, quality control, training, access to equipment, spare parts, etc.). This is indicative of the low development level of markets and their poor integration with global value

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chains. The unavailability of B2B services, e.g. servicing machinery at the place of operation reduces the efficiency of processes (Andrzejczak, 2017). The high cost of business services is one of non-tariff barriers to trade, which particularly affects the sub-Saharan region (Balistreri et al. 2014). Their popularisation and reduction of barriers to access through trade reforms within regional groups, e.g. Eastern and Southern Africa, contributes to increased income of relatively poor people (Balistreri et al. 2016). As indicated by Balistreri et al. (2016), it is the case because the reforms favour agriculture and boost remuneration of un-qualified employees faster than annuities from other production resources.

A major problem is poor access to financial services. Results of the research show that their low availability restricts the possibility to diversify the activity or improve the quality of the products offered by small business owners, the consequence of which is low efficiency generated from the engaged resources (Ayalew et al., 2014). The cost of capital in the region is considerably higher than in other regions due to a high risk and usually insufficient ordinary forms of securing loan repayments. Financial institutions frequently have no instruments to identify reliable borrowers (this results partly from informal relations, e.g. lack of written agreements, lack of ownership titles, etc.), which translates into poorer availability of capital (Cf. Creech et al. 2014; Benjamin et al., 2016). From the viewpoint of small business owners, this is a major limitation to their capabilities of developing the business and participating in larger markets. The lack of such possibilities is reflected in a lower motivation to increase the effectiveness of the pursued activities.

The issue of credit availability influences the capabilities of reproduction processes, in particular in the agricultural activity, which prevails in the region (Czyżewski, 2007). The mechanisms of institutional support for farmers develop in the sub-Saharan region (infrastructural projects, individual subsidy projects, consulting), yet the scale of the activities is too small and their assumptions not always correspond to the actual needs of the sector. Farmers have a limited access to capital, also in the form of a micro-credit, due to the fact that they generate low income, even given the local circumstances, and have a low creditworthiness, and that many farmers are women and young persons for whom the access is even more difficult. Aterido et al. (2011) argue that women are in a worse situation, which is implied by gender inequality in terms of access to capital for natural persons. The necessity to increase access to credit, including the development of the institution of micro-credit, is crucial in the region.

Nagler and Naude (2017) carried out research on efficiency and production of non-farm enterprises on a sample of six African countries. They noticed that rural households operated based on both push and pull factors, in particular in
the area of activities with low barriers to entry, such as sales, trade, and rarely in activities requiring outlays, such as transport services or other specialised services. They found that the rural activity pursued by women, far from concentrations of people and seasonal, was characterised by lower efficiency than the urban activity pursued by men on a continuous basis. What should be considered particularly interesting is their conclusions regarding the causes of rural enterprises’ exit from the market. They include low profitability, lack of funds, and idiosyncratic shocks (Nagler and Naude 2017).

The earlier research by Reyes and Hallward-Driemeier (2011) emphasised that differences in productivity of enterprises run by women and men resulted partly from the method of classifying them to both categories. At the same time, they noticed that the differences between women and men, which referred to personality traits and attitudes, were not sources of differences in the organisations’ efficiency. They argued that women and men benefited from their education and management skills to a similar extent, which was reflected in the enterprise’s production. The results of their research, in turn, pointed to the significance of the environment and family for enterprise efficiency. Sons benefit from the fact that their fathers were entrepreneurs or that they joined their family businesses to a greater extent than daughters (Reyes and Hallward-Driemeier 2011). This confirms the major importance of family bonds to the issue of taking up and the method of pursuing a business activity in the region.

African entrepreneurs function within narrow networks of trust. Interpersonal relationships bring far-reaching benefits which can assume a social, economic or political form. Such a hermetic perception of market relationships could lead to limiting access to new services, knowledge or resources. The development of communication technologies, which has been noticeable in the 21st century, has created new institutional and physical conditions for the functioning of the mechanisms. As indicated by Mehta et al. (2011), agricultural communities, owing to new communication possibilities and trust relationships expanded as a consequence, have a chance for development, network expansion, extension of the value chain through matching agricultural producers with processors.

2.2. Qualitative description of entrepreneurship in sub-Saharan Africa

Carrying out a quantitative analysis of the phenomenon of entrepreneurship is difficult primarily in terms of terminology (what entrepreneurship is), which was signalised at the beginning of this study. Taking up the research of en-
entrepreneurship in the sub-Saharan region in the 21st century, it has been decided to approximate entrepreneurship through the number of registered enterprises (NEWB – the number of new enterprises registered in a given year) in this study as this measure is available for the examined group of entities and, additionally, applied in similar studies (Munemo 2015, Adusei 2016). At the same time, in order to broaden the adopted research perspective, another measure, referring to the density of new enterprises (BUSSDEN – the number of enterprises registered per 1,000 persons aged 15-64), is taken into account and elements of internal entrepreneurship are analysed based on qualitative data (internal entrepreneurship, attitudes and skills) in this point.

The relevant research involved also another difficulty, i.e. lack of standardised entrepreneurship databases. Therefore, three databases were used5. The first set comprised 19 countries of the region in the period 2003-2014 (Botswana, Burkina Faso, the Dem. Rep. of the Congo, Ethiopia, Gabon, Ghana, Kenya, Lesotho, Malawi, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, the Rep. of South Africa (RSA), Togo, Uganda, Zambia), and the data for it were derived from the Penn World Tables and World Development Indicators databases. The second set comprised data for 38 countries of the region approached from the statistical perspective, covering the latest available data for individual countries from the World Bank Enterprise Survey6. The third set of data included the qualitative data concerning internal aspects of entrepreneurship, i.e. attitudes and skills. Data from the GEDI (Global Entrepreneurship Development Institute) report for 2017 were used with this respect. The selection of both the sample and time period within each set was determined by data availability7.

Tab. 1 presents descriptive statistics regarding entrepreneurship and the level of regulations in the sub-Saharan region in the examined period. It needs to be stated that the diversity of each of the considered variables implies deep differences in the analysed group. Both in terms of the quantity and density of enterprises, a considerably lower value of the median than the mean implies that the data are characterised by right-skewness. A vast majority

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5 The availability of statistical data covering the sub-Saharan region is incomparably lower than for other regions of the world. Although the scope of reporting economic values gradually expands in subjective and objective terms, gaps in the data hamper an analysis regarding sub-Saharan Africa in a similarly in-depth manner as other areas. Having this in mind and simultaneously making an attempt to accomplish the objectives set in this research, the region was characterised in quantitative terms.

6 The data description is contained in Appendix no. 1.

7 For some countries, data from more than one period were available (1, 2 or 3 from various years), yet they were not sufficient to create a panel of data. Therefore, it was decided to make a static comparison covering as large a group of countries as possible.
of the countries are characterised by the entrepreneurship level below the mean, the value of which results from high values regarding entrepreneurship leaders, which are outliers. This is confirmed by the data regarding the range and standard deviation, in particular with reference to the quantity of new enterprises in total. The diversity concerns also the formal conditions for registering an economic activity. Much greater differences concern, however, the cost of registration – the median value is over twice lower than the mean here – than the time needed for registering the enterprise (Tab. 1).

**Tab. 1.** Descriptive statistics for the panel of observations of 19 SSA countries in the period 2003-2014 (the missing data were ignored)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs.</th>
<th>Mean</th>
<th>Median</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Range</th>
<th>Std. dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEWB (in K)</td>
<td>154</td>
<td>19.81</td>
<td>1.87</td>
<td>0.01</td>
<td>291.32</td>
<td>291.31</td>
<td>53.36</td>
</tr>
<tr>
<td>BUSSDEN</td>
<td>154</td>
<td>1.51</td>
<td>0.58</td>
<td>0.00</td>
<td>13.11</td>
<td>13.11</td>
<td>2.62</td>
</tr>
<tr>
<td>BUSSCO</td>
<td>226</td>
<td>146.21</td>
<td>62.70</td>
<td>0.30</td>
<td>1 540.20</td>
<td>1 539.90</td>
<td>270.22</td>
</tr>
<tr>
<td>TIME</td>
<td>226</td>
<td>39.18</td>
<td>35.00</td>
<td>6.00</td>
<td>166.50</td>
<td>160.50</td>
<td>28.62</td>
</tr>
</tbody>
</table>

**BUSCO** – cost of enterprise establishment; **TIME** – time needed for enterprise establishment.


The analysis of specific source data regarding the entire sample of 19 countries permitted the ascertainment that RSA is the strong leader as more than 200K new enterprises were registered there in 2012, i.e. almost twice as many as in the other 13 countries for which data from that year are available (nearly 156K). Nigeria, Uganda, Botswana, and Ghana are in the lead in terms of entrepreneurship. Interestingly, as regards entrepreneurship density, the region’s leader is Botswana, followed by RSA. The density of enterprises in these two countries (ca. 10/1,000 and 5/1,000, respectively, in the period 2008-2011) considerably exceeds the density of enterprises in other examined countries (e.g. Lesotho 1.41; Zambia 1.12; Ghana 1.02; Uganda 0.93; Nigeria 0.82). The diversity between the individual countries in terms of the number of enterprises with respect to the first parameter (NEWB) can be related to the population size.

A clear diversity is noticeable also with respect to the cost and time required for registering an economic activity in individual countries of the region. Interestingly, the lowest costs of enterprise establishment were identified in Botswana, RSA, Lesotho, Namibia, Gabon, and Ghana. At the same time, however, a low cost of an activity is not tantamount to quick registration (Tab. 2). This means that, while a low cost does not guarantee high entrepreneurship, the countries characterised by entrepreneurship generally facilitate its growth.
The time-consuming nature of the procedures in Botswana is not an obstacle to entrepreneurship. The analysis of the data regarding the procedures of registering an economic activity implies that they are not a decisive factor facilitating entrepreneurship in the region.

Tab.2. Characteristics of the enterprise registration procedures in sub-Saharan countries in 2016

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of days until enterprise registration</th>
<th>Cost of enterprise registration</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rwanda</td>
<td>4</td>
<td>0.2</td>
<td>RSA</td>
</tr>
<tr>
<td>Senegal</td>
<td>6</td>
<td>0.8</td>
<td>Botswana</td>
</tr>
<tr>
<td>Togo</td>
<td>6</td>
<td>8.1</td>
<td>Lesotho</td>
</tr>
<tr>
<td>Zambia</td>
<td>8.5</td>
<td>11.5</td>
<td>Namibia</td>
</tr>
<tr>
<td>Niger</td>
<td>10</td>
<td>14.3</td>
<td>Gabon</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>10</td>
<td>19.7</td>
<td>Ghana</td>
</tr>
<tr>
<td>Rep. Dem. of Congo</td>
<td>11.5</td>
<td>21.1</td>
<td>Kenya</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>13</td>
<td>29.3</td>
<td>Rep. Dem. of Congo</td>
</tr>
<tr>
<td>Ghana</td>
<td>14</td>
<td>30.3</td>
<td>Sierra Leone</td>
</tr>
<tr>
<td>Kenya</td>
<td>22</td>
<td>31</td>
<td>Nigeria</td>
</tr>
<tr>
<td>Nigeria</td>
<td>25.2</td>
<td>32.4</td>
<td>Niger</td>
</tr>
<tr>
<td>Uganda</td>
<td>26</td>
<td>33.7</td>
<td>Zambia</td>
</tr>
<tr>
<td>Lesotho</td>
<td>29</td>
<td>37.1</td>
<td>Uganda</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>35</td>
<td>42.2</td>
<td>Malawi</td>
</tr>
<tr>
<td>Malawi</td>
<td>37</td>
<td>43.4</td>
<td>Burkina Faso</td>
</tr>
<tr>
<td>RSA</td>
<td>43</td>
<td>48.5</td>
<td>Rwanda</td>
</tr>
<tr>
<td>Botswana</td>
<td>48</td>
<td>62.7</td>
<td>Senegal</td>
</tr>
<tr>
<td>Gabon</td>
<td>50</td>
<td>69.3</td>
<td>Ethiopia</td>
</tr>
<tr>
<td>Namibia</td>
<td>66</td>
<td>71.2</td>
<td>Togo</td>
</tr>
</tbody>
</table>

Source: own work based on WDI data, 2017.

In the sub-Saharan region, the prevalent enterprises are micro and small ones in terms of size, service ones in terms of activity profile, domestic in terms of ownership, manufacturing for the local market and run by women (in particular
small agricultural businesses). **Tab. 3** presents the statistics describing individual types of enterprises in sub-groups by enterprise size, activity type, ownership status, export orientation, and share of women in the ownership structure. The greatest diversity concerning the analysed enterprise characteristics is related to the role of women and origin of enterprises. In some countries, the share of foreign enterprises is similar to that of domestic ones (Botswana), or even prevails (Gabon), while in others the market is dominated by domestic entrepreneurs (a share of over 90%, e.g. Sudan, Cameroon, Eritrea).

**Tab. 3.** Descriptive statistics of enterprise characteristics for 38 SSA countries (the missing data were ignored) – a share of specific types of enterprises

<table>
<thead>
<tr>
<th>Variable*</th>
<th>Obs.</th>
<th>Mean</th>
<th>Median</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Range</th>
<th>Std. dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE</td>
<td>38</td>
<td>0.60</td>
<td>0.59</td>
<td>0.39</td>
<td>0.88</td>
<td>0.49</td>
<td>0.12</td>
</tr>
<tr>
<td>MEDE</td>
<td>38</td>
<td>0.29</td>
<td>0.28</td>
<td>0.11</td>
<td>0.42</td>
<td>0.31</td>
<td>0.08</td>
</tr>
<tr>
<td>LE</td>
<td>38</td>
<td>0.11</td>
<td>0.10</td>
<td>0.01</td>
<td>0.21</td>
<td>0.2</td>
<td>0.05</td>
</tr>
<tr>
<td>MANU</td>
<td>38</td>
<td>0.37</td>
<td>0.36</td>
<td>0.12</td>
<td>0.73</td>
<td>0.61</td>
<td>0.15</td>
</tr>
<tr>
<td>RET</td>
<td>35</td>
<td>0.19</td>
<td>0.18</td>
<td>0.02</td>
<td>0.36</td>
<td>0.34</td>
<td>0.09</td>
</tr>
<tr>
<td>OSER</td>
<td>35</td>
<td>0.42</td>
<td>0.39</td>
<td>0.19</td>
<td>0.75</td>
<td>0.56</td>
<td>0.14</td>
</tr>
<tr>
<td>DOMO</td>
<td>38</td>
<td>0.77</td>
<td>0.81</td>
<td>0.39</td>
<td>0.98</td>
<td>0.59</td>
<td>0.13</td>
</tr>
<tr>
<td>FOO</td>
<td>38</td>
<td>0.20</td>
<td>0.17</td>
<td>0.01</td>
<td>0.61</td>
<td>0.6</td>
<td>0.13</td>
</tr>
<tr>
<td>EXP</td>
<td>37</td>
<td>0.09</td>
<td>0.08</td>
<td>0.02</td>
<td>0.31</td>
<td>0.29</td>
<td>0.06</td>
</tr>
<tr>
<td>NOEXP</td>
<td>38</td>
<td>0.88</td>
<td>0.9</td>
<td>0.6</td>
<td>1</td>
<td>0.4</td>
<td>0.09</td>
</tr>
<tr>
<td>FEMPART</td>
<td>38</td>
<td>0.59</td>
<td>0.62</td>
<td>0.14</td>
<td>0.91</td>
<td>0.77</td>
<td>0.22</td>
</tr>
</tbody>
</table>

*Explanations of the acronyms and abbreviations: MSE – micro and small enterprises; MEDE – medium enterprises; LE – large enterprises; MANU – manufacturing enterprises; RET – retail enterprises; OSER – other services; DOMO – domestic enterprises; FOO – foreign-owned enterprises; EXP – export enterprises; NOEXP – non-export enterprises; FEMP – enterprises with a share of women.

The latest available data were taken into consideration, i.e. data from the period 2006-2017, in accordance with the information in Appendix no. 1.


Afterwards, the extent to which the presence of given types of enterprises was correlated in the analysed group of countries was examined. With the aim to determine to what degree certain types of enterprises have specific characteristics, the matrix of correlations of the analysed characteristics was calculated in **Tab. 4**.
A significant correlation between export activity and enterprise size was found. In the countries where the share of large and medium enterprises is higher, more export is expected, while in the countries where micro and small enterprises prevail, the correlation with export is negative. Moreover, the share of manufacturing enterprises also indicates the export orientation and the low share of manufacturing enterprises involves a greater share of non-export enterprises. A positive and significant correlation was found also between the share of domestic enterprises and the share of women in enterprise management. Interestingly, no correlation between the share of foreign enterprises and the share of exporters was identified.

**Tab. 4.** Correlation matrix of enterprise characteristics in sub-Saharan Africa

<table>
<thead>
<tr>
<th></th>
<th>MSE</th>
<th>MEDE</th>
<th>LE</th>
<th>MANU</th>
<th>RET</th>
<th>OSER</th>
<th>DOMO</th>
<th>FOO</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANU</td>
<td>-0.284</td>
<td>0.239</td>
<td>0.247</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RET</td>
<td>0.223</td>
<td>-0.256</td>
<td>-0.095</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSER</td>
<td>0.081</td>
<td>-0.035</td>
<td>-0.118</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOMO</td>
<td>0.174</td>
<td>-0.136</td>
<td>-0.168</td>
<td>0.233</td>
<td>-0.125</td>
<td>-0.145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FOO</td>
<td>-0.123</td>
<td>0.082</td>
<td>0.138</td>
<td>-0.292</td>
<td>0.071</td>
<td>0.227</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXP</td>
<td>-0.489</td>
<td>0.392</td>
<td>0.455</td>
<td>0.379</td>
<td>-0.240</td>
<td>-0.132</td>
<td>-0.159</td>
<td>0.100</td>
</tr>
<tr>
<td>NOEX</td>
<td>0.264</td>
<td>-0.154</td>
<td>-0.329</td>
<td>-0.413</td>
<td>0.316</td>
<td>0.125</td>
<td>0.111</td>
<td>0.011</td>
</tr>
<tr>
<td>FEMP</td>
<td>0.161</td>
<td>-0.105</td>
<td>-0.184</td>
<td>0.134</td>
<td>-0.046</td>
<td>0.036</td>
<td>0.346</td>
<td>-0.363</td>
</tr>
</tbody>
</table>

Correlations (Enterprise Survey) The determined correlation coefficients are significant with $p < .05000$

N=34 (The missing data were removed by cases)


Moreover, an attempt was made to verify the degree to which the presence of specific types of enterprises could be connected with the characteristics of economies related to human capital and infrastructure. It turned out that the number of micro and small enterprises in sub-Saharan Africa is connected with a lower level of human capital and penetration of the market of mobile telephony services. A higher level of education involves a greater share of medium enterprises, while the popularity of mobile services – with a share of large enterprises. In countries with a broader access to the Internet a higher number of trade enterprises and a lower number of other service enterprises are expected. The level of economic development expressed with the domestic product per person is significantly and positively correlated with the market share of foreign enterprises (Tab. 5). No relations between enterprise characteristics and the level of health care (MORT) or access to electricity, which approximates the infrastructural development, were identified.
## Tab. 5. Correlation matrix of enterprise characteristics and economy characteristics in sub-Saharan Africa

<table>
<thead>
<tr>
<th>Variable</th>
<th>GDPpc</th>
<th>HC</th>
<th>MORT</th>
<th>ELECT</th>
<th>MOBIL</th>
<th>INTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE</td>
<td>-0.268</td>
<td>-0.338</td>
<td>0.223</td>
<td>-0.319</td>
<td>-0.374</td>
<td>-0.170</td>
</tr>
<tr>
<td>MEDE</td>
<td>0.276</td>
<td>0.343</td>
<td>-0.189</td>
<td>0.314</td>
<td>0.289</td>
<td>0.146</td>
</tr>
<tr>
<td>LE</td>
<td>0.181</td>
<td>0.237</td>
<td>-0.209</td>
<td>0.238</td>
<td>0.392</td>
<td>0.157</td>
</tr>
<tr>
<td>MANU</td>
<td>-0.254</td>
<td>0.287</td>
<td>-0.223</td>
<td>-0.001</td>
<td>0.119</td>
<td>0.271</td>
</tr>
<tr>
<td>RET</td>
<td>0.212</td>
<td>0.162</td>
<td>0.131</td>
<td>0.046</td>
<td>0.148</td>
<td>0.351</td>
</tr>
<tr>
<td>OSER</td>
<td>0.137</td>
<td>-0.314</td>
<td>0.013</td>
<td>0.062</td>
<td>-0.051</td>
<td>-0.347</td>
</tr>
<tr>
<td>DOMO</td>
<td>-0.421</td>
<td>-0.143</td>
<td>-0.117</td>
<td>-0.173</td>
<td>-0.180</td>
<td>0.079</td>
</tr>
<tr>
<td>FOO</td>
<td>0.395</td>
<td>0.078</td>
<td>0.176</td>
<td>0.158</td>
<td>0.147</td>
<td>-0.182</td>
</tr>
</tbody>
</table>

GDPpc – GDP per capita, HC – access to primary education; MORT – infant mortality rate per 1,000 births; ELECT – access to electricity per 100 inhabitants; MOBIL – access to mobile services per 100 inhabitants; INTER – access to the Internet per 100 inhabitants.

Correlations (Enterprise Survey) The determined correlation coefficients are significant with p < .05000. N=38 (The missing data were removed by cases)


Taking the presented data and the correlations arising from them into account, it can be stated that entrepreneurship varies among individual countries of the region. Such entrepreneurship leaders have emerged in the region that are more oriented towards the activity of large enterprises with an export potential. A majority of the countries have still contended with the low effectiveness of the private sector, which results from enterprise characteristics – low-scale activity, often being small farms run by women, with production for own needs. Therefore, the conclusions concerning the external dimension of entrepreneurship could be supplemented and elaborated upon by performing a system analysis of the internal dimension of entrepreneurship.

From the viewpoint of entrepreneurship perceived in terms of attitudes, habits and values, African societies seem to be ready for institutional changes and open to take advantage of them. According to GEDI data for 2017, the rating of individual attitudes in the region is twice as high (index value being 0.60 per 100) as institutional variables (index value being 0.31 per 100). It corresponds also to the mean for all the rated countries in the world (index value being 0.60). Institutional variables according to the index for the sub-Saharan Africa region received a lower rating in comparison to the mean for all regions (index value being 0.49).
As a result of the comparative analysis of the data concerning both entrepreneur attitudes (ATT), entrepreneur abilities (ABT), and entrepreneur aspirations (ASP), it was found that entrepreneurs from the relevant region achieved worse results than the mean for entrepreneurs from all regions of the world. This concerns in particular the category of variables classified by GEDI as “abilities.” According to the index rating, entrepreneurs in the region, even in the countries with the highest ability ratings, such as RSA and Botswana, have lower abilities to commence an economic activity (start-up abilities) than the mean for the world. The advantages of the region include cultural support, risk acceptance, and networking (building and using a network of acquaintances and connections), included by the authors of the GEDI index in the category of entrepreneurial attitudes.

The region is characterised by a clear discrepancy between noticing business opportunities and the level of abilities permitting commencement of an economic activity. Start-up abilities, like technology absorption abilities, remain at a lower level in this region than in other regions. The regional leaders: Botswana, Gabon and RSA, which have the highest ratings of technology absorption abilities, are rated below the world mean also in this regard. The greatest
discrepancy is noticeable within the risk acceptance variable. A clear difference is recorded between the countries with the lowest value of the variable, such as Ethiopia, Burundi, Liberia or Mauretania (0.017-0.025) and the leader – Botswana (0.748). Strong right-skeweness is evident within all the variables, but the leader stands out from the remaining countries in particular in the case of risk acceptance.

Fig. 2. Overall values, attitudes and aspirations of entrepreneurs in sub-Saharan Africa (ASS mean, Minimum and Maximum) and in the world on average. Source: own work based on GEDI data, 2017.

The research carried out by Robson et al. (2009) on 496 enterprises from Ghana permitted formulation of specific features of private sector innovation on the example of a Western African country. The use of gradual innovations rather than revolutionary innovations prevails among entrepreneurs. The scope of innovation use depends on the entrepreneur’s characteristics, in particular on his or her education level. Innovations are used by large and export enterprises but no impact of enterprise growth on innovation use has been determined. Enterprises located in conurbations are more innovative than those operating in big cities and small towns. The strive for increasing the innovation of enterprises in sub-Saharan Africa constitutes a significant component of support for the local entrepreneurship. However, this requires creation of conditions for enterprise development, in particular support for abilities and attitudes of entrepreneurs, as well as an active policy aimed to improve business environment.

The analysis of quantitative data reveals a noticeable entrepreneurship potential in the sub-Saharan region, which has strong roots in the cultural system.
However, institutional limitations, including system limitations and those concerning the enhancement of human capital competencies, at the same time indicate fundamental limitations of the private sector. The technological progress is relatively slow and the technology absorption abilities are restricted by infrastructure and scope of the knowledge and abilities held. This implies that especially policies aimed to improve economic efficiency and creation of business opportunities might constitute key entrepreneurship factors in the sub-Saharan region.

4. Determinants of entrepreneurship in Africa

The results of research employing econometric modelling imply that entrepreneurship is a determinant of economic growth (Audretsch 2002). The above was confirmed with reference to the observations at enterprise, sector, region and country levels. The research by Adusei (2016) confirm the correlation between growth and entrepreneurship also with reference to the sub-Saharan region. It uses a model with random effects on the sample of 12 countries in the period 2004-2011. Therefore, it is worth addressing the issues of impact of entrepreneurship on the economic development level, in particular stating which factors could potentially contribute to entrepreneurship growth in the region.

The hypothesis assumed in this study provides that entrepreneurship in the sub-Saharan region is related to productivity and financial market development. The verification of the thesis concerning the relation between productivity and entrepreneurship might contribute to a better understanding of the issue of relations between the pursuit of a policy aimed to improve work efficiency and allocate resources effectively and the promotion of the private sector development (Kiernan and Huiyu 2017). Similarly, the degree of financial market development may constitute a certain indicator of the overall policies the introduction of which permits its achievement. Therefore, both variables directly indicate the features of the economy and the policies required for their creation. The research results reveal that the financial market development positively affects entrepreneurship development (Ghanemi Achouche 2017). A state that pursues a policy supporting development and enhancing financial markets could in fact simultaneously contribute to the development of innovation and entrepreneurship (Meierrieks 2014). Already Schumpeter (1960) argued that banks were not merely intermediaries in turnover but generators of purchasing power. Banks create purchasing power through credit means of payment, which behave like cash and permit settling due amounts. Entrepreneurs use them to obtain access to means of production and outlet markets by way of new combinations of resource use. Banks
intermediate between those who needs funds for investments and those who own means of production (Schumpeter, 1960). Thanks to that the presence of the financial sector supports the private sector development abilities.

In order to verify the posed hypothesis on determinants of entrepreneurship in sub-Saharan Africa, empirical research was carried out. NEWB was adopted as the independent variable. A hypothesis providing for a positive influence of financial market development and productivity was adopted (total factor productivity). In addition, it was decided that a positive impact of consumer expenses, expenditures on fixed assets, human capital (Adusei, 2016) and rule of law on entrepreneurship (Grosanu et al. 2015, Hall et al. 2015) was expected, and therefore they were included in the research as control variables. The data characteristics are presented in Tab. 6. A sample of 19 countries in the period 2003-2014 was taken into account. The sample size was accepted given the fact that the data unavailability prevents the assumption of a larger group, which corresponds to other studies on the region in the relevant literature (research based on ca. 10-20 countries are accepted) (e.g. Munemo, 2012, Adefeso 2016, Adusei 2016).

Tab. 6. Data characteristics.

<table>
<thead>
<tr>
<th>Short name of variable</th>
<th>Full name of variable</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>l_NEWB</td>
<td>Entrepreneurship (number of new enterprises registered in a given year)</td>
<td>World Development Indicators</td>
</tr>
<tr>
<td>logTFP</td>
<td>Productivity (calculated by the Tokarski method)</td>
<td>Own calculations based on Penn World Tables</td>
</tr>
<tr>
<td>l_GOVCON</td>
<td>Consumption (annual share of growth)</td>
<td>World Development Indicators</td>
</tr>
<tr>
<td>l_GFCF</td>
<td>Accumulation (annual share of growth)</td>
<td>World Development Indicators</td>
</tr>
<tr>
<td>l_HC</td>
<td>Percentage of children going to primary schools</td>
<td>World Development Indicators</td>
</tr>
<tr>
<td>l_CrePriGDP</td>
<td>Ratio of credits for the private sector to GDP</td>
<td>World Development Indicators</td>
</tr>
<tr>
<td>RulLa</td>
<td>Rule of law perceived by the respondents expresses the degree of trust in the institutions of ownership, assertion of claims, police, courts, as well as likelihood of violence and crime</td>
<td>World Governance Indicators</td>
</tr>
</tbody>
</table>

Source: own work.

The dynamic model was specified in the research, which is acknowledged particularly in the case of panel research of macroeconomic data, where T is lower than N, i.e. the number of the analysed periods is lower than the number of the studied cases (Arellano and Bond 1991, Blundell and Bond 1998). Furthermore, the selection of the model justifies the occurrence of autocorrelation, as well as the fact that the autocorrelation of the dependent variable constitutes
one of the model’s assumptions. The high number of enterprises registered in the previous period may approximate the trend of further growth of new enterprises, which arises from the favourable conditions of the macro-environment. The one step model with GMM with asymptotic standard errors (Model 1 in Tab. 7) was adopted for the specification. In order to determine the robustness of results, also changed specifications of results were checked (Model 2-5) and additional control variables were introduced to the model. The correctness of the dynamic models was checked using AR(1) and AR(2) tests, as well as the Sargan over-identification test and the Wald test. The selection of a model with random effects (Model 5) in the case of the panel model resulted from the high p-value in the Hausman test. The model indicated a low p-value in the Breusch-Pagan test for heteroskedasticity. The estimation results are presented in **Table 7**.

**Tab. 7. Dynamic models for the NEWB independent variable**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>( l_{NEWB}(-1) )</td>
<td>0.658 (&lt;0.0001)</td>
<td>0.643 (&lt;0.0001)</td>
<td>0.635 (&lt;0.0001)</td>
<td>0.683 (&lt;0.0001)</td>
<td>-</td>
</tr>
<tr>
<td>const</td>
<td>0.364 (0.861)</td>
<td>0.140 (0.861)</td>
<td>-4.877 (&lt;0.0001)</td>
<td>-2.551 (0.409)</td>
<td>-13.601 (0.006)</td>
</tr>
<tr>
<td>logTFP</td>
<td>0.660 (0.003)</td>
<td>0.748 (0.003)</td>
<td>1.139 (0.003)</td>
<td>0.837 (0.017)</td>
<td>2.372 (0.003)</td>
</tr>
<tr>
<td>( l_{CrePriGDP} )</td>
<td>0.286 (0.001)</td>
<td>0.294 (0.009)</td>
<td>0.165 (0.017)</td>
<td>0.181 (0.009)</td>
<td>0.976 (&lt;0.0001)</td>
</tr>
<tr>
<td>( l_{GFCF} )</td>
<td>-0.308 (0.007)</td>
<td>-0.272 (0.007)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>( l_{GOVCON} )</td>
<td>0.095 (0.002)</td>
<td>0.092 (0.007)</td>
<td>-</td>
<td>-</td>
<td>0.117 (0.003)</td>
</tr>
<tr>
<td>RuLa</td>
<td>-</td>
<td>-</td>
<td>-0.246 (0.007)</td>
<td>-0.19 (0.185)</td>
<td>1.203 (0.003)</td>
</tr>
<tr>
<td>( l_{HC} )</td>
<td>-</td>
<td>-</td>
<td>0.703 (0.0002)</td>
<td>0.353 (0.477)</td>
<td>2.271 (0.013)</td>
</tr>
</tbody>
</table>

**Tests of dynamic models**

| Test for AR(1)  | -4.673 (0.0000) | -2.233 (0.0255) | -4.928 (0.0000) | -2.359 (0.018) | - |
| Test for AR(2)  | -0.531 (0.595) | -0.359 (0.7195) | 0.318 (0.750) | 0.544 (0.586) | - |
| Sargan          | 42.048 (0.162) | 13.828 (0.9992) | 34.292 (0.454) | 13.758 (0.999) | - |
| Wald            | 1595.76 (0.000) | 1665.66 (0.0000) | 1864.93 (0.0000) | 1284.08 (0.0000) | - |

Model 2: a 2-stage dynamic panel model; Model 3: a 1-stage dynamic panel model; Model 4: a 2-stage dynamic panel model; Model 5: a model with random effects. The p-value is in brackets.

Source: own work, research carried out in Gretl.
The positive impact of productivity and financial market development on the number of registered enterprises was confirmed with various model specifications assumed and control variables included, which permits the assumption of the robustness of the estimated model’s results. The inclusion of control variables enabled the confirmation of a favourable influence of human capital, consumption and accumulation on entrepreneurship. The possible negative impact of governmental expenses arising from gross investments in fixed assets on economic growth in the region was mentioned already in the research by Adefeso (2016), who explained this phenomenon above all with the possible influence of corruption on the lack of productivity of such investments. At the same time, based on the obtained results, it can be presumed that the rule of law is not necessary for an increase in the number of enterprises on the market. Conclusions to the contrary may be drawn based on the results of the model with random effects. The ambiguity of the obtained results in this regard suggests that the impact of institutions on entrepreneurship requires further in-depth research.

5. Conclusions

Entrepreneurship is perceived as an opportunity for economic development in the sub-Saharan region, in particular as a place of employment for the growing population of young people. The purpose of the conducted research was to explain the factors that are significant from the viewpoint of private sector development prospects, the key factor of which is entrepreneurship development in sub-Saharan Africa in the 21st century. As a result of the literature review, it was found that these factors are external (i.a. presence of foreign entrepreneurs, importance of investments from emerging economies, development aid) and internal (i.a. access to B2B services, access to credit, institutional development, human capital quality, presence of black economy). There are entrepreneurship leaders present in the region (e.g. Botswana, RSA, Ghana, Gabon), which fare considerably better than the remaining countries, even if they face potentially crucial barriers to entry, such as the time and cost of enterprise establishment. This was the reason for conducting more in-depth research and seeking more complex determinants of entrepreneurship in the analysed region.

The obtained results imply that the attitudes displayed by entrepreneurs in the region include strong openness and willingness to commence an activity in the private sector. However, the region features a paradox of attitudes and abilities. The inner conviction about the ability to commence it is limited by the actual level of abilities resulting from access to education and degree of infrastructural and institutional development of markets. In addition, relations be-
between various types of enterprises were found. Entrepreneurship develops more rapidly in countries with better access to modern information and communication technologies. International-scale activities and more efficient processing are still reserved for large, often foreign, enterprises. It can be also presumed that local entrepreneurship takes advantage of the presence of enterprises from higher income regions, in particular as a result of the expected spill-over effects.

The research confirmed the positive influence of the policies that promote productivity and financial development on entrepreneurship in sub-Saharan Africa. The conclusion is that overall actions intended to improve economy efficiency and overall policies aimed to stabilise the macro-environment for the purposes of the financial sector development simultaneously exert a positive influence on the growth of new enterprises in sub-Saharan Africa. However, some results of the estimation of econometric models imply that the relation between the rule of law and entrepreneurship is significant and negative, which would suggest that establishing enterprises in countries characterised by e.g. stronger corruption and lower trust in the state could be actually easier than in countries with a higher level of the rule of law. Nevertheless, in view of deficits of qualified workforce, positive impact of education on entrepreneurship is noticed. Given regional inequalities in the access to education and in the education level of human resources, as well as the overall improving trend of these features, which is unheard of in regions characterised by a stable situation as regards the educational system and educated people, policies aimed to improve qualifications and competencies seem necessary for the promotion of the private sector development in the sub-Saharan region.

Acknowledgements

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Appendix 1

<table>
<thead>
<tr>
<th>Country</th>
<th>Year of data (last available)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angola</td>
<td>2010</td>
</tr>
<tr>
<td>Botswana</td>
<td>2010</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>2009</td>
</tr>
<tr>
<td>Country</td>
<td>Year</td>
</tr>
<tr>
<td>-------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Burundi</td>
<td>2014</td>
</tr>
<tr>
<td>Cameroon</td>
<td>2016</td>
</tr>
<tr>
<td>Central African Republic</td>
<td>2011</td>
</tr>
<tr>
<td>Chad</td>
<td>2009</td>
</tr>
<tr>
<td>Congo, Rep.</td>
<td>2009</td>
</tr>
<tr>
<td>Côte d'Ivoire</td>
<td>2016</td>
</tr>
<tr>
<td>Eritrea</td>
<td>2009</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>2015</td>
</tr>
<tr>
<td>Gabon</td>
<td>2009</td>
</tr>
<tr>
<td>Gambia</td>
<td>2006</td>
</tr>
<tr>
<td>Ghana</td>
<td>2013</td>
</tr>
<tr>
<td>Guinea</td>
<td>2016</td>
</tr>
<tr>
<td>Guinea-Bissau</td>
<td>2006</td>
</tr>
<tr>
<td>Kenya</td>
<td>2013</td>
</tr>
<tr>
<td>Lesotho</td>
<td>2016</td>
</tr>
<tr>
<td>Liberia</td>
<td>2009</td>
</tr>
<tr>
<td>Madagascar</td>
<td>2013</td>
</tr>
<tr>
<td>Malawi</td>
<td>2014</td>
</tr>
<tr>
<td>Mali</td>
<td>2016</td>
</tr>
<tr>
<td>Namibia</td>
<td>2014</td>
</tr>
<tr>
<td>Niger</td>
<td>2017</td>
</tr>
<tr>
<td>Nigeria</td>
<td>2014</td>
</tr>
<tr>
<td>Rwanda</td>
<td>2011</td>
</tr>
<tr>
<td>Senegal</td>
<td>2014</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>2009</td>
</tr>
<tr>
<td>South Africa</td>
<td>2007</td>
</tr>
<tr>
<td>South Sudan</td>
<td>2014</td>
</tr>
<tr>
<td>Sudan</td>
<td>2014</td>
</tr>
<tr>
<td>Swaziland</td>
<td>2016</td>
</tr>
<tr>
<td>Tanzania</td>
<td>2013</td>
</tr>
<tr>
<td>Togo</td>
<td>2016</td>
</tr>
<tr>
<td>Uganda</td>
<td>2013</td>
</tr>
<tr>
<td>Zambia</td>
<td>2013</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>2016</td>
</tr>
</tbody>
</table>

Source: own work based on Entreprise Survey data, 2017.
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Dr Aneta Szymańska participated in numerous trainings, seminars, workshops and conferences, both national and international, at many of them giving lectures. She is the author of 40 publications on management, marketing and public relations, as well as several research projects of applicative nature. She also wrote a book titled “Public Relations in the Integrated Marketing Communication System” and is a co-author of the monograph entitled “Public relations. Social significance and directions of development”.

Dr Szymańska took part in numerous international study visits and was a guest lecturer in: EDC Paris Business School (France), The Universitat Politècnica de València (Spain), HHL- Leipzig Graduate School of Management (Germany), Universidade de Coimbra (Portugal), University of Macedonia (Greece), as well as participated in several international conferences, i.e. 20th CEEMAN Annual Conference in Johannesburg and Cape Town (The Republic of South Africa), International Conference LUSEEC 2015 at LUMINA – The University of South-East Europe, Conferences on Humanities and Social Sciences in Bucharest (Romania), 15th International Conference on Diversity in Organizations, Communities and Nations at the University of Hong Kong (China), 2015 International Business Research, Economics, Finance and MIS Conference (BREFMM Conference, 2015).