5TH INTERNATIONAL SCIENTIFIC-BUSINESS CONFERENCE
LEADERSHIP, INNOVATION, MANAGEMENT AND ECONOMICS:
INTEGRATED POLITICS OF RESEARCH

LIMEN 2019

December 12, 2019
Graz University of Technology
GRAZ, AUSTRIA
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SELECTED PAPERS

Association of Economists
and Managers of the Balkans
UdEkoM Balkan

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PREFACE

The organizing is an evolutionary phenomenon, distinctive because of laws of existence and maintaining all structures in all processes of their functioning. As such, it is a civilizational phenomenon also that occurs as a component of human, individual and social activities and as a factor in the overall development of man and society. On the other hand, as a deliberate human activity, organizing involves seeking solutions to problems that occur on the way to achieving specific goals. No goal can be achieved without appropriate or necessary, or at least minimal organization of conditions, factors and processes needed for goal achievement. However, the modern era requires new types of leaders and managers, and new forms of organization; demands those who are willing and able to lead the company / corporation / state, in a distinct competitive environment, with all the good and bad sides brought by the globalization of world economy.

Association of Economists and Managers of the Balkans headquartered in Belgrade – Serbia at premises of the Graz University of Technology – Austria organized 5th International Scientific-Business Conference titled: Leadership, Innovation, Management and Economics: Integrated Politics of Research – LIMEN 2019 on December 12, 2019.

Bearing in mind the challenges of a dynamic engagement in contemporary organizations, it is clear that within the analysis of these important subjects should be applied interdisciplinary approach. For this reason, the main theme of the conference LIMEN 2019 was processed through the following key topics:

- Leaders and Leadership
- Entrepreneurship
- Innovation
- Creativity
- Management of Small and Medium-sized Enterprises
- Contemporary Strategic Management
- Financial Management and Banking
- Marketing Management
- Project Management
- GREEN Management
- Natural Resource Management
- Quality Management
- Management of New Technologies
- Management Information Systems
- Education Management
- Intercultural Management
- Public Sector Management
- Human Resources Management
- Organizational Behavior
- Business Ethics
- Macroeconomics
- Microeconomics
- Finance
- Marketing
- Labour Law
- Business Law

The aim of this year's conference is also achieved – bring together the academic community of the Balkans region and other countries and publication of their papers with the purpose of popularization of science and their personal and collective affirmation. The unique program combined presentation of the latest scientific developments in these areas, interactive discussions and other forms of interpersonal exchange of experiences.

The conference was opened by professor Vladimir Tomašević, Faculty Council Chair of the Faculty of Engineering Management – Belgrade and a member of the Scientific Committee of the conference and professor Stefan Grbenić from the University of Technology Graz, Institute of Business Economics and Industrial Sociology, Graz, Austria.

Within publications from LIMEN 2019 conference:

- **20 double peer reviewed papers** have been published in the International Scientific-Business Conference LIMEN: Leadership, Innovation, Management and Economics: Integrated Politics of Research – **Selected Papers**,
- **24 double peer reviewed papers** have been published in the International Scientific-Business Conference LIMEN: Leadership, Innovation, Management and Economics: Integrated Politics of Research – **Conference Proceedings**,
- **31 abstracts** have been published in the International Scientific-Business Conference LIMEN: Leadership, Innovation, Management and Economics: Integrated Politics of Research – **Book of Abstracts**.

LIMEN 2019 publications have more than 380 pages. All papers have been scanned with Crosscheck (powered by Turnitin) and have Orcid iD integration.

Besides that, 16 papers have been accepted for publication in the conference partner journals namely:

1. **Littera Scripta** (Economics, Corporate finance, Finance and Valuation) is a multidisciplinary journal published by the Institute of Technology and Business in České Budějovice (Czech Republic). The journal is currently indexed on the list of reviewed non-impacted journals published in the Czech Republic, in CEJSH, in EZB, and in ERIH PLUS. In May 2018 Littera Scripta was suggested to be included in Scopus. At present it is beeing reviewed by the Scopus Content Selection & Advisory Board (CSAB) and Web of Science database.
2. **Journal of Innovative Business and Management** is published by DOBA Faculty, Maribor (Slovenia) and referred in international scientific journal bases DOAJ, Google Scholar, EconPapers, ResearchGate and RePec. It has been published since 2009 and since then it has been attracting more and more interest among the readers, who predominantly come from academia and business practice.
3. **Balkans Journal of Emerging Trends in Social Sciences (Balkans JETSS)** is an international scientific journal, published by the Association of Economists and Managers of the Balkans. Aims and scope are economics, management, law and tourism. Balkans JETSS have

following indexations: Google Scholar, CEEOL (Central and Eastern European Online Library), ProQuest´s Serial Solutions, Summon, Primo Central, Alma, EBSCO´s EDS Discovery Service and Knowledge Base, TDNet and OCLC. Until the end of 2020, it will be submitted to indexation in SCOPUS and WoS, too.

4. **Journal of Sustainable Development (JSD)** is an international journal published by the Integrated Business Faculty – Skopje, Macedonia. JSD area includes three pillars of economic, social and environmental development issues. All these aspects are considered relevant for publishing in the JSD. The journal is officially listed in the respected EBSCO database, CEEOL database, as well as the databases of Business Source Complete and Sustainability Reference Center. All articles published in the journal are also indexed in these databases.

Participation in the conference took **129 researchers** with the paper representing **20 different countries** (Albania, Austria, Belgium, Bosnia & Herzegovina, Bulgaria, Croatia, Czech Republic, Hungary, Ireland, Italy, Latvia, North Macedonia, Poland, Portugal, Romania, Russia, Serbia, Slovak Republic, Slovenia and Spain), different universities, eminent faculties, scientific institutes, colleges, etc.

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THE IMPORTANCE OF KNOWLEDGE MANAGEMENT IN THE PROCESS OF BRAND EQUITY

Tina Vukasović[1]

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Abstract: *The potential to provide customers with information about experience and credence qualities in advance of purchase has resulted in widespread recognition of the significance of brands in relation to consumer choice. The paper's contribution is to present the importance of knowledge management in the process of creating brand equity in selected companies. A strong and trusted brand provides the company with competitive advantage and in order to achieve it, employee knowledge is required. The quantitative research method and a structured questionnaire were used for collecting research data. Online survey was used as the method of data collection. The research sample comprised 200 respondents, of whom i.e. company employees in selected companies. The distinctive contribution of this research arises from the examination of brand equity in the context of an emerging market in selected companies. This paper investigates the role of knowledge management in the process of creating brand equity.*

Keywords: *Brand, Brand equity, Knowledge management, Small and medium-sized enterprises, Slovenia.*

1. INTRODUCTION

Over the past two decades in particular, marketing research and marketing practice have paid increasing attention to the processes associated with building a strong relationship between brand and consumer and it is often argued that the brand is the most valuable asset for any company (Aaker, 1991a, b, 2003; Kapferer, 1997; Blackett, 1993). The concept of brand equity is of particular relevance to consumer choice. In essence, brand equity measures the value of the brand, both to the organization and to the consumer. For the consumer, this added value arises from the brand's role as an indicator of desirable attributes and as the basis for building an emotional bond (Teas and Grapentine, 1996; Mourad et al., 2010). Brand equity is a key concept for marketing academics and one of the most prized assets for firms (Ambler, 2003; Christodoulides and de Chernatony, 2010; Christodoulides et al., 2015).

Brands are quickly becoming a common subject of deliberation and discussion in business. They are an important part of a company's assets and must be correctly managed and valued. Companies are becoming increasingly aware that the higher the brand equity, the greater the company's competitiveness and the higher the achieved market price of products or services (Vukasović, 2016). A successful brand brings the company recognition with buyers, suppliers, shareholders, banks, and other external stakeholders. In order to achieve this objective, the company requires specific types of knowledge which is used in the company and transferred to business processes. We must see to increasing or at least maintaining brand equity, as brands can rightly be classified as part of a company's assets. Strong and established brands differentiate the company from the products or services offered by the competition (Vukasović, In press).

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Modern marketing theory and practices have recognized the brand equity paradigm as a key strategic asset for organizations. Keller and Lehmann (2006) have argued that a brand is influential or manifests its importance at three key levels which correspond to three distinct yet interconnected market dimensions, or indeed three distinct markets: customer, product and financial markets. Thus, value accrued by these markets may be designated as brand equity. The brand equity paradigm has been discussed extensively in marketing literature and many researchers have offered a wide array of definitions for the brand equity concept (Aaker, 1991; Farquhar, 1989; Sriram et al., 2007; Christodoulides and de Chernatony, 2010; Davcik et al. 2015), as well as different perspectives on the factors that influence brand equity.

Today, knowledge is a fundamental value. An increasing number of companies are therefore coming to the awareness that sufficient knowledge is needed for their survival and success. Knowledge is a justified true belief which is perceived as a dynamic human process of justifying personal belief toward the truth. There are two types of knowledge; implicit or tacit knowledge, which is personal knowledge of which we are often unaware and explicit knowledge or knowledge in companies, which is formal and systematic (Nonaka and Takeuchi, 1995, p. 58). Both types of knowledge affect brand management as one of the most important marketing tools. Our study focuses on both types of knowledge that play a part in the brand management process and the process of creating brand equity. If companies want to be successful, knowledge management must include all knowledge processes, i.e. knowledge discovery and acquisition, knowledge transfer, and knowledge application. From the organisation's point of view, knowledge management is exceptionally important, as it enables brand equity, as part of the company's assets, not to be decreased but maintained or even increased (Vukasović, In press).

Even though literature on knowledge management is extensive, little attention is paid to studying the importance or role that knowledge management plays in the process of creating brand equity. Authors (Keller, 1993; Aaker, 1996; Grønhaug et al., 2002; Yoo and Donthu, 2002; Gibbert et al., 2002; Pappu et al., 2006; Anselmsson, 2014; Vukasović, 2016, and others) often study only the importance of consumer knowledge of the brand and its value and not the importance of knowledge in the company for brand equity. Richards et al. (1998, p. 47) argue that it is surprising that the marketing function in so many companies has done so little to advance the management of value-adding activities, i.e. brand knowledge. It is our intent, therefore, to establish which knowledge the studied small and medium-sized enterprises (SMEs) use to achieve brand equity (Vukasović, In press).

The main research problem is to analyse the importance of knowledge management in the process of creating brand equity in the SMEs. Companies can maintain their competitive advantage only with high-value brands. In order to create high-value brands, knowledge is needed within the company. The objective of the study is to establish the importance of different types of knowledge in the process of creating brand equity and to provide key findings and proposals on the role of knowledge in creating brand equity. The distinctive contribution of this research arises from the examination of brand equity in the context of an emerging market in SMEs. The paper's contribution is to present the role of implicit and explicit knowledge in the process of creating brand equity in the SMEs.

2. RESEARCH DESIGN

2.1. Methodology and sample

The quantitative research method and a structured questionnaire with different sets of questions were used for collecting research data. The research design was designed according to the questionnaire in research of the author Vukasović (In press). The survey took place in a in SMEs in Slovenia. Online survey was used as the method of data collection. We have distributed the online survey to Facebook groups for those interested in entrepreneurship (Female Entrepreneurship, Slovenian Entrepreneurship, Marketing Academy). These are companies that promote entrepreneurship, have large business databases and have sent them a survey link by email (more than 16,000 emailing addresses in total).

We have decided to survey SMEs, regardless of their geographical location (all of Slovenia). The criterion used to determine the size of the company was the number of employees in the company. A small enterprise is an enterprise with up to 50 employees and a medium enterprise is an enterprise with up to 250 employees.

The research sample comprised 200 respondents. Malhotra (1999) suggested minimum sample of problem solving is at least 200 samples. Thus, we have used the recommendations of Malhotra (1999), which are at least 200 samples. A simple random sample was chosen. To complete the survey, we asked sole proprietors, managing directors, entrepreneurs and founders, office/department managers who have an overview of the situation and development in the company, product managers, project managers, marketing managers or marketing staff. The survey used the improbability sampling technique - self-selection and quota sampling; we planned a quota of 75% of small enterprises and 25% of medium enterprises; we achieved a quota of 20% of medium enterprises and 80% of small enterprises. The collected data were analysed and processed with SPSS. The share of respondents in the age group from 36 to 40 years is the highest and represents 52%. The age group from 25 to 30 years represents 18%. The age group above 46 represents 12%. The age group from 31 to 35 years represents 10% and the age group from 41 to 45 years with the lowest percentage of 8%.

Asked which level of educational attainment prevails among the employees managing brands, the majority of the 200 responded answered that these were people with higher education, i.e. 58.6%, followed by employees with university education (25.2%), secondary education (12.6%), and a negligible share of those with postgraduate education (2.9%) and primary education (0.7%). This allows us to conclude that brand management in SMEs is in the hands of educated staff, which indirectly indicates that companies attribute importance to knowledge when it comes to brand management.

3. RESULTS AND DISCUSSION

This part of the analysis of the study is the basic descriptive statistical analysis whose results are presented below. The next question focused on the respondents' opinions on the formal knowledge of employees who are included in brand management in the company. The respondents assessed a set of statements on a scale of 1 to 5, with 1 meaning "I completely disagree" and 5 "I completely agree". The results are shown in Table 1.

Table 1 shows that the respondents mainly agreed with the majority of the statements, as only one assessment has a value of less than 3, while all others are higher and indicate agreement. The highest level of agreement (3.92) was achieved by the statement that the employees have the appropriate level of education for the job. For this statement, standard deviation is also relatively low, which indicates uniformity of answers. A high level of agreement (3.71) was also achieved by the statement that the employees' knowledge of brand management is satisfactory. The lowest level of agreement (2.72) was achieved by the statement that only employees with appropriate formal knowledge are promoted in the company.

Table 1. Respondents' opinions on the formal knowledge of employees who are included in brand management

Statement	M	SD	n
The employees have the appropriate level of education for the job.	3.92	.643	200
The employees use the documented knowledge to gain new knowledge and create brand equity.	3.86	.891	200
Brand management knowledge is kept in manuals, books, documents.	3.75	.894	200
The employees' knowledge of brand management is satisfactory.	3.71	.876	200
The employees' knowledge of marketing is satisfactory.	3.65	.967	200
Only employees with appropriate formal knowledge are promoted in the company.	2.72	.986	200

Note: M – mean, SD – standard deviation, n – number of answers

The next set of statements refers to the application of knowledge. The respondents assessed the statements on a scale of 1 to 5, with 1 meaning "I completely disagree" and 5 "I completely agree".

Table 2 shows that the respondents relatively uniformly agreed with all the statements. The highest level of agreement (4.75) was achieved by the statement that the management rewards the best proposals and ideas. For this statement, standard deviation is also relatively low, which indicates uniformity of answers. Indecisiveness was evident with the second and third statement. The agreement that the management rewards employees for successfully applied new knowledge with financial incentives slightly prevailed (0.05) over the agreement with the statement that it rewards them with non-financial incentives.

Table 2. Application of knowledge

Statement	N	M	SD	n
The management rewards the best proposals and ideas.	80	4.75	.669	200
The management rewards employees for successfully applied new knowledge – financial incentives.	81	4.23	.866	200
The management rewards employees for successfully applied new knowledge – non-financial incentives.	81	4.18	.895	200

Note: M – mean, SD – standard deviation, n – number of answers

The next set of statements refers to the possibility of acquiring knowledge. The results are shown in Table 3. The respondents assessed the statements on a scale of 1 to 5, with 1 meaning "I completely disagree" and 5 "I completely agree".

Table 3 shows that the highest level of agreement (4.66) was achieved by the statement that the management invests extensively in brand management training. For this statement, standard deviation is also relatively low, which indicates uniformity of answers. A high level of agreement was also achieved by the statements that the company's current vision and policy support

the process of learning and knowledge development (4.38) and that the management encourages and supports employees in further education (4.33). The lowest level of agreement (3.62) was achieved by the statement that the employees read specialised literature.

Table 3. Acquiring knowledge – training

Statement	M	SD	n
The management invests extensively in brand management training.	4.66	.648	200
The company's current vision and policy support the process of learning and knowledge development.	4.38	.765	200
The management encourages and supports employees in further education.	4.33	.656	200
The management encourages part-time study.	4.12	.678	200
The employees acquire the majority of the knowledge within the company through internal training, teamwork, etc.	4.05	.745	200
The management is aware that it must invest in employee training.	4.01	.781	200
The employees express the desire and need to learn.	3.82	.765	200
The employees read specialised literature.	3.62	.821	200

Note: M – mean, SD – standard deviation, n – number of answers

The next set of the statements refers to the possibility of acquiring knowledge from the competition. The results are shown in Table 4. The respondents assessed the statements on a scale of 1 to 5, with 1 meaning "I completely disagree" and 5 "I completely agree".

Table 4 shows that the highest level of agreement (4.31) was achieved by the statement that the employees systematically monitor and acquire new knowledge from the competition, suppliers, and customers. For this statement, standard deviation is also relatively low, which indicates uniformity of answers. A high level of agreement (4.24) was also achieved by the statement that the knowledge acquired from customers and suppliers provides the company with comparative advantage and differentiation from the competition. For this statement, standard deviation is again relatively low, which indicates uniformity of answers. A relatively high level of agreement (3.96) was achieved by the statement that the employees use benchmarking (learning from the best competitors) to acquire new knowledge. The lowest level of agreement (2.95) was achieved by the statement that new knowledge is acquired by buying licences and patents.

Table 4. Acquiring knowledge from the competition

Statement	M	SD	n
The employees systematically monitor and acquire new knowledge from the competition, suppliers, and customers.	4.31	.652	200
The knowledge acquired from customers and suppliers provides the company with comparative advantage and differentiation from the competition.	4.24	.656	200
The employees use benchmarking (learning from the best competitors) to acquire new knowledge.	3.96	.781	200
The employees acquire new knowledge by setting up a joint venture with those who already have the required knowledge.	3.45	.993	200
The management buys licences and patents to acquire new knowledge.	2.95	.896	200

Note: M – mean, SD – standard deviation, n – number of answers

The next set of statements refers to the types of knowledge transfer. The results are shown in Table 5. The respondents assessed the statements on a scale of 1 to 5, with 1 meaning "I completely disagree" and 5 "I completely agree".

Table 5 shows that the highest level of agreement (4.63) was achieved by the statement that the employees help each other with advice. For this statement, standard deviation is also relatively low, which indicates uniformity of answers. A high level of agreement (3.75) was also achieved by the statement that the employees acquire knowledge and experience directly through education and training. The lowest level of agreement (2.95) was achieved by the statement that the employees hide their knowledge from their colleagues, as they believe this increases their competitiveness.

Table 5. Knowledge transfer

Statement	M	SD	n
The employees help each other with advice.	4.63	.685	200
The employees acquire knowledge and experience directly through education and training.	3.75	.867	200
The most appropriate type of knowledge transfer in the company are work meetings.	3.46	.762	200
The company has established a best practice transfer process among employees.	3.42	.915	200
The employees hide their knowledge from their colleagues, as they believe this increases their competitiveness.	2.95	.894	348

Note: M – mean, SD – standard deviation, n – number of answers

4. CONCLUSION

In today's competitive business environment, the concept of brand equity is an important source of strategic intelligence for marketers. Brand equity serves three important roles: (a) it acts as a magnet to attract new customers to the firm, (b) serves as a reminder to the customers about the organisation's products and services, (c) it is customer's emotional tie to the organisation (Lemon et al., 2001). The paper's contribution is to present the importance of knowledge management in the process of creating brand equity. A strong and trusted brand provides the company with competitive advantage and in order to achieve it, employee knowledge is required. In small and medium-sized enterprises, brand management is in the hands of educated staff, which indirectly indicates that the company believes knowledge to be important for brand management. The employees have the appropriate education for brand management; however, they lack branding knowledge. An encouraging finding of this study is that brand management is entrusted to qualified staff, which gives weight and importance to this subject matter.

The selected companies place a lot of importance on training its employees, which contributes to better brand valuation and management. The management invests extensively in brand management training. Current vision and policy support the process of learning and knowledge development and the management encourages and supports employees in further education. In order to receive training on brands, the employees most frequently employ Internet training, while the knowledge acquired from customers and suppliers provides the company with comparative advantage and differentiation from the competition. They are aware that the knowledge acquired from customers and suppliers provides the company with competitive advantage. This is the right direction, as comparative advantages over the competition can be achieved through a synergy of own knowledge and the knowledge of suppliers and customers. They are aware that own and newly acquired knowledge can create new and greater added value for the company. The employees cooperate and exchange knowledge and experiences.

It can be concluded that the studied small and medium-sized enterprises are aware of the importance of knowledge in the process of creating brand equity. Implicit (informal knowledge, ideas, experience, values, etc.) and explicit knowledge (formal educational attainment, documented knowledge, training, knowledge acquired from customers and suppliers, etc.) play an important role in the process of creating brand equity, which in turn requires knowledge management processes such as discovery, acquisition, exchange, and application of knowledge, which the studied companies implement. The results are comparable to a study by the author Vukasović (In press) in the case of one selected company. Knowledge management opens the door to many opportunities, where management is dealing with knowledge and the role of management in all of these, and an important learning resource is important. The time in which we live demands that decision-makers, who are increasingly influencing the organization as such, demand from the organization's leaders to quickly take decisions, and the management must be aware of the real value of its employees and the knowledge they have. By transferring, maintaining and nurturing knowledge, employees work for the benefit of the organization, and with motivation, the organization's goals become feasible (Vukasović, In press).

A clear limitation is the fact that this study has only small and medium-sized enterprises and one country (Slovenia).

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MANAGERIAL COMPETENCIES AND SUCCESSION IN FAMILY FIRMS

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Abstract: *The effectiveness of an organisation determined a host of factors which are inextricably linked to its resources and environment. The ever-increasing pace of change affects both what is inside and outside an organisation. This changes the way organisations are managed as their actions become ever more complex endeavours that often require changes in approaches. This is also true for family-owned firms*[2] *whose founder's (or founders') intention was not just to create temporary jobs and earning opportunities for their families but also to ensure stable succession and, thereby, the "longevity" of their family enterprise. Continued duration and growth of family business depends on how effective the transfer of knowledge, competencies, powers and ownership is. Unless the founder recognises this early enough in the process, they will be harming their organisations. The study attempts to explain the essence and significance of managerial and successor competences in a family business, and presents a model of professional competences for managers as determinants of the development of family businesses.*

Keywords: *Efficiency, Effectiveness, Developing competences.*

1. INTRODUCTION

How a business is run will change dynamically depending on how turbulent the conditions in which it operates become (Trocki, Grucza & Ogonek, 2009, p. 11). Family firms are often the "backbone" of the national economy. Without them, technological progress and all manner of innovations would be substantially limited. W. Orłowski notes that there are few large corporations in market economies that would not have originated from a dynamic family-run business. Conversely, there is an untapped potential for growth in every dynamic, innovative and well-managed family firm. If one were to ask about what it is that distinguishes a family business from a large corporation the most, there could only be one answer: an individual.

2. FAMILY FIRM FOUNDER'S MANAGERIAL COMPETENCIES AS A FACTOR IN EFFECTIVE SUCCESSION

Experience shows that ensuring effective succession in a family business for two or three generations is not at all an easy task. The odds that a family firm will survive long enough for it to transition to the next generation are not too good: only about thirty percent of family businesses make it to the second generation, and just ten percent make it to a third (Fleming, 2006, p. 8). While there are many different reasons why business transitions fail, they are mostly related to insufficient planning and the missing arrangements for who will take responsibility for the firm and what this responsibility involves.

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[2] A family firm is a business entity in which ownership or management control is vested in the hands of the members of a single family and which involves more than one family member in its operations.

While the market offers a widespread and practically limitless supply of all traditional resources you might need to run a family business (tangible assets, workforce, information, finance), there is one asset that cannot be bought ready-made, namely managerial and organisational competencies. They are the synergistic outcome of knowledge, skills, experience, personal traits, attitudes and behaviours of all employees in an organisation.

3. MANAGERIAL COMPETENCIES

The concept of competencies provides an answer to one of the fundamental questions posed by scholars of entrepreneurship: Why is it that only some people can see and realise the opportunities coming up in their environment that allow them to become very effective.

Building a competitive position involves competency management. A review of literature on the subject shows that knowledge, skills, attitudes, personal traits, experience and behaviours are the most often cited elements of competencies. The term "competency" is multifaceted, which makes it hard to classify and define it. While they have made numerous attempts at reconciling their positions, scholars are still not unanimous about its meaning. As noted by G. Filipowicz, virtually every author comes up with their own definition and tries to justify it in some way or other (Filipowicz, 2004, p. 17). This is not so much because of some defect or limitation in how that concept can be used in practice, but rather reflects a pragmatic attitude in which effectiveness trumps theoretical considerations. It is worth noting that management science saw the term appearing at the time human capital began to rise in importance.

Against this general background, the definition proposed in this study is as follows: managerial competencies represent the managers' ability to utilise necessary knowledge, skills, personal traits, experiences, motivations, attitudes and behaviours to attain any such objectives, results or standards as may expected of them in their specific job. All of these components are meant to ensure effective performance of any tasks in an ever-evolving environment.

Modern theories of management highlight the role of knowledge and skills in effective organisational performance. Knowledge and skills have come to be viewed as a source of competitive advantage and, as such, as a core organisational resource. It is for this reason, too, that employee development is in greater focus now as a means of increasing both personal competencies of employees (knowledge and skills) and those of an organisation as a whole.

4. EFFECTIVENESS AS A BASIC DIMENSION OF A MANAGER'S WORK

P. Drucker considers effectiveness the most important aspect in analysing the executive's role (Drucker, 1994). According to S. Banaszak, effectiveness is the ability to take decisions of great importance to the organisation (Banaszak, 2006, p. 20).

Every action – whether by an organisation, a team or an individual – is taken in specific conditions and inherently involves some expenditure to reach its objective. In evaluating an action, one should therefore consider its efficiency (*sprawność*) and effectiveness (*skuteczność*) and the performance of the actor/entity involved as a fundamental dimension of praxeology (Strzoda, 2005, p. 9). Therefore, the manager's work involves deciding on the direction and quality of work, both of which are of enormous importance to the entire organisation and its performance and achievements (Banaszak, 2006, p. 20).

The effectiveness of action *ex post* is the relationship between the results or outcomes of some action and the expenditure that was needed to achieve them. Effectiveness *ex ante*, on the other hand, is defined as the relationship between the objectives of action and the anticipated means needed to achieve them (Pszczołowski, 1978, p. 60). Praxeology, which is the study of efficient action, provides the most universal definition of effectiveness, highlighting its essential components, such as efficacy (a degree to which the intended goal has been achieved) and economy understood as the cost of achieving the goal (the amount of work, funds and time expended). In this context, some scholars distinguish between performance and effectiveness in management. P. Drucker argues that a manager's performance can be evaluated in terms of two concepts: efficiency and effectiveness (Stoner, et al, 2001, p. 29). The way Drucker understands those terms, efficiency means "*doing things right*", while effectiveness is the ability to set proper goals (Bartkowiak, 2002, p. 95), or "*doing the right things*" (Stoner, et al, 2001, p. 29). According to Stoner, Freeman and Gilbert, performance is a measure of a manager's efficiency and effectiveness, or a measure of the extent to which managers can set and achieve proper goals (Stoner, et al, 2001, p. 23). People working in organisations and those who manage them are assumed to act rationally – that is to say, in their decision-making they are guided by whatever goals have been set and they strive to achieve them with a minimum of expenditure involved.

Following M. Bielski, one could say that, in this sense, evaluating effectiveness/performance is about the degree to which the desired objectives have been attained, and then about the degree to which the available resources have been used (Bielski, 1997, p. 104). K. Obuchowski, in turn, suggests that effective human action means going beyond certain ad-hoc requirements, that is to say, beyond one's ability to carry out routine day-to-day tasks (Obuchowski, 1997, p. 21). Obuchowski also notes that effectiveness is a measure of one's capacity to complete future tasks, or in other words, tasks that are unspecified and unknown. T. Majewski notes that, under praxeological approach, every action that is viewed as positive is effective (Majewski, 2005, p. 88). According to Majewski, such action might be expressed with such terms of efficiency as efficacy, economy, accuracy, cleanliness, soundness, or simplicity. Tadeusz Kotarbiński, on the other hand, claims that action is effective when its leads to the result intended as its objective (Kotarbiński, 1958, p. 116).

Effectiveness, therefore, is a gradable concept – one that is measured by the degree of goal attainment. Actions can be fully effective, partially effective, ineffective (when we did not move even by an inch towards our goal) or counter-effective (when not only did we not inch any closer to our goal, but we in fact moved even further away from it) (Kieżun, 1978, p. 28). In analysing the issue of effectiveness, one must mention P. Drucker, whose view was that managerial effectiveness cannot be associated with any innate predisposition or a specific personality type (Drucker, 1994, p. 122). According to P. Drucker, "*...there is no effective personality. The effective people I have seen differ widely in their temperaments and their abilities, in what they do and how they do it, in their personalities, their knowledge, their interests"*. For W. Krzeszowski, this means that whether or not a manager is effective does not depend on their personality traits, but rather on the conditions they operate in (Krzeszowski, 2005, p. 39). Understood this way, the issue boils down to tracking down the sources of effectiveness: whether they are inherent in the manager or their environment.

Numerous other terms have been used to discuss effectiveness, such as economy, productivity, profitability, performance, or efficacy, to name a few based on a review of the literature. In comparing those terms, authors usually do not determine their scopes in relation to each other.

According to T. Majewski, effectiveness can be expressed by different forms of efficiency (Majewski, 2005, p. 88). W. Kieżun, in turn, claims that the core values of efficient action (efficient here equals effective), i.e. action that prevents chaos and disorder and is measured by entropy, are its efficacy, usefulness and economy (Kieżun, 1998, p. 18). According to Kieżun, there are also other (additionally significant) forms of efficiency, namely cleanliness, accuracy and reliability. One should note the clear indecision regarding the relationship among efficacy, effectiveness and efficiency. T. Kotarbiński confirms this when he says: *What is interesting is the relationship in which efficacy stands to effectiveness, namely whether efficacy is just a particular case of effectiveness or not. Now, if effectiveness is merely a degree of goal attainment and does not include any effects that are useful but were not part of the goal, then efficacy is not just a particular case of effectiveness, for efficacy pertains not just to the intended effects but, more generally, to any effects that occurred as a consequence, irrespective of whether someone intended them to occur or not, as long as they are positive and not negative.* (Kotarbiński, 2003, p. 576). According to A. Szpaderski, what efficacy and effectiveness have in common is that both of them are oriented towards the result of action. In short, the difference is that effectiveness is about attaining the intended goal, whereas efficacy is about attaining positive results with no condition being imposed that such results must be as intended in view of the goal of action (Szpaderski, 2005, p. 43).

5. SHAPING AN EFFECTIVE SUCCESSOR'S COMPETENCIES

In general terms, based on T. Majewski's formula (Majewski, 2006, p. 55), the effectiveness of a successor's (manager's) action is a function of three factors, namely: general operating conditions, motivation, and competencies. According to R. Walkowiak, what determines the effectiveness of a manager's or successor's actions are their competencies (Walkowiak, 2004, p. 90). This relationship can be illustrated using R. Walkowiak's own effectiveness-competency function matrix (Fig. 1).

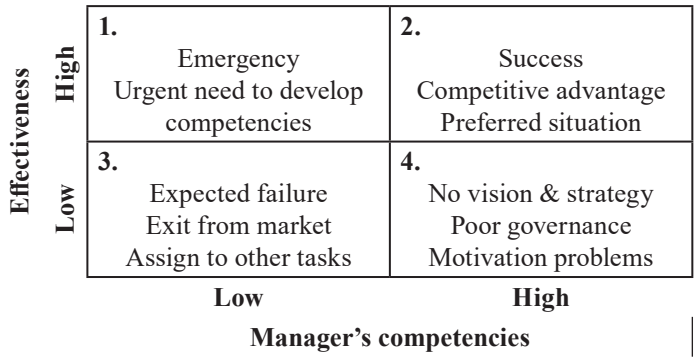

Figure 1. Effectiveness-competency matrix

Source: Own compilation based on (Walkowiak, 2004, p. 92 & Majewski, 2006, p. 57)

The missing link between the manager's competencies and effectiveness (first quadrant) could be explained by luck, some fortuitous circumstance or a large effort on the part of subordinates. In the fourth quadrant, the explanation could be poor motivation. The situation in which competencies are low but effectiveness is high is most common after some technological change. High effectiveness in the immediate period after such change is due mostly to the experience and involvement of managers who need their competencies bolstered, including by participation in training (Walkowiak, 2004, p. 93). Where the manager's competencies are high but effectiveness is low (fourth quadrant), this might imply poor governance. The reasons could be inappropriate organisational vision and strategy, both of which should determine what appropriate competencies are. Situations in which

there is a link between competencies and work results (performance) are a more frequent occurrence, however. The most desirable arrangement is one where both competencies and work results are high (second quadrant). Low competencies translating to poor work results (third quadrant) should lead one to consider the need for a manager's professional development or replacement. In their manager's competency matrix, A. Gick, M. Tarczyńska (Gick & Tarczyńska, 1999, p. 45) and R. Walkowiak (Walkowiak, 2004, p. 92) distinguish four possible situations:

1. High competencies – high effectiveness (organisation enjoys a strong market position);
2. High competencies – low effectiveness;
3. Low competencies – high effectiveness;
4. Low competencies – low effectiveness (the need should be considered for a manager's professional development or replacement).

According to T. Majewski, the more a specific job competency profile is aligned with the tasks to be carried out on that job and the closer the manager's competency profile is to the requirements of their position, the more effectively the relevant tasks will be carried out (Majewski, 2006, p. 58). That said, the authors believe that competencies are just one of the conditions for managerial success. High competencies that are aligned with the requirements of a specific job or role within the organisation foster high effectiveness (Walkowiak, 2004, p. 93). It should be borne in mind, however, that maintaining high effectiveness in the long run requires a concern for continuous and systematic improvement of managerial competencies.

6. AN EFFECTIVE MANAGER/SUCCESSOR IN A FAMILY FIRM. A MODEL

The interdisciplinary nature of human resource management, including competency management, poses some difficulties in selecting the scientific methods to be used in describing the problem under consideration. Empirical research often uses (directly or with some modifications) scientific methods and tools that have been tried and tested in other studies. This is true for this study, although in selecting the method and tools I have followed my own methodology. I have developed my theoretical model (a list of 52 competencies) based on the following:

- the sales manager's tasks, responsibilities, duties and authority;
- the competency model for effective managers as described in the literature;
- the profile of the 20th century manager;
- National Standards for Professional Qualifications.

As part of this study, a list of competencies has been compiled with an appendix defining each of those competencies. They were sent to a group of 180 purposely selected managers (owners) representing family-run businesses. The goal of this survey was to verify if relevant competencies were chosen and to limit their number on that basis. The respondents were asked to identify 15 competencies they believed were most important for their successor to have. To mark their significance, the effective manager's competencies were listed in descending order of importance.

Based on the survey, two business competencies are thought to be of key importance for an effective and efficient manager/successor to have in a family-run business, namely identifying client needs and sales planning and development, with more than 60% of the managers selecting those competencies. Other important base competencies include resilience to stress (49% of responses) and client acquisition skills (43% of responses). Other significant factors affecting managerial effectiveness are the ability to organise and conduct business meetings, the ability to pitch offers and client orientation. These competencies were indicated by every third respond-

ent. Out of these 52 competencies (divided into three groups of bases, professional and social competencies), I have selected 18 (Table 1) which have the greatest influence on how effectively and efficiently a manager/successor in a family firm acts. The competencies in this model were operationalised using the ABC analysis, which is based on the Pareto principle (20/80 rule) stating that approx. 20% of items in any given set represent approx. 80% of the cumulative value of a feature or attribute for which the set is being examined. The assumption here is that key competencies come from a subset representing 20% of the entire competency set.

Table 1. Competencies of an effective and efficient manager/successor in a family firm

Business competencies	Sales planning and development
	Identifying client needs
	Resilience to stress
	Customer acquisition
	Conducts business meetings
	Client orientation
	Presentation skills
Professional competencies	Product knowledge
	Relationship building
	Market analysis
	Decision-making
	Collaborative attitude
	Ability to act effectively
Social competencies	Negotiation skills
	Communication skills
	Ability to delegate authority and tasks
	Motivation
	Conflict resolution skills

Source: Bartkowiak, Niewiadomski, 2012, p. 21

The survey shows that, out of all the competencies concerned, communication skills, ability to create relationships and product knowledge are among those of utmost importance for the manager/successor in a family firm to do their work both effectively and efficiently. Negotiation skills and ability to acquire customers come up high in the ranking, too. Based on how the sales managers ranked the most important competencies from the three groups, one may conclude that efficient managerial action is determined by a number of varied and multifaceted skills. As shown above, competencies are not differentiated in terms of their importance, the underlying assumption being that each one of them is very important and that each of them should be reflected in whatever an effective manager/successor in a family firm does in practice. The model is not static and closed, because there is no way of predicting all organisational behaviours or what happens in its environment, even in the most immediate future.

7. CONCLUSION

Most businesses and employees today vie for success as their goal. Attaining success requires far-reaching changes and willingness to change. The source of success is good management – one that extends not only to technologies but also people. Increasing effectiveness in bridging the competency gap is therefore a new challenge for numerous managers/successors in family-run businesses. For that reason, the competency model proposed here might be of interest to those who seek to boost the strategic performance of their family firms.

The way it was built, the model shows the individual competencies as correlated, mutually pervading and supplementary. The selected competencies are not fixed categories; the model was designed with a view to being modified and augmented according to needs. We can realise how difficult it is to compile lists and that individual researchers create their broad lists of competencies which are not ranked and are given different names and interpretations. Also, dividing competencies into different subsets is always a matter of convention and depends on what the particular authors or institutions need. In this study, such a division was made to show the internal structure of competencies.

The issues raised here require further, and deeper, exploration. What is proposed here should be treated as working hypotheses subject to further elaboration. In conclusion, an effective manager/successor in a family firm might be said to be someone with competencies that allow them to act efficiently and effectively, or to put it in other words, someone who is both "*doing the right things*" and "*doing things right*" (Drucker, 1994, p. 33).

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EARNED VALUE MANAGEMENT IN AGILE PROJECTS

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Abstract: *Earned value management, as project management practice for monitoring, reporting, forecasting, and controlling, is generally characteristic of traditional project management. The method reckons on baselined plans with fixed and well-defined scope. This technique measures cost and schedule upon a project baseline. A resulting simple set of metrics provides early warnings of performance issues and allows timely and appropriate adjustments. On the other hand, the Agile approach in project management focuses on maximizing Return of Investment through early and continuous delivery of value, as outlined in the Agile manifesto. What is not defined is in which way to manage and track the cost to evaluate actual ROI. A possible solution is to implement a well-known EVM in Agile by using only three basic planning parameters: Velocity, Estimated Backlog, and Cost.*

Based on our results, EVM could be used effectively at sprint and release levels, to provide additional transparency of project progress to the stakeholders and to allow us to implement corrective measures just in time.

Keywords: *Agile, EVM, ROI, Control, Forecasting, Sprint, Release.*

1. INTRODUCTION

In the last couple of decades, agile like approaches become the most utilized project management methodology, not only in the field of software development but also in the event of different types of products and services.

Agile project management, in comparison with traditional waterfall-like approaches, emphasis incremental delivery, and planning on the multiple levels, instead of thoroughly planning the whole project flow in the very beginning.

The agile approach moves things that we typically do in later stages earlier. This approach, known as the shift-left paradigm, converges on delivering value to the end customer, focusing on maximizing the return of investment through early and continuous delivery of value.

The Agile project management approach is implemented through a process of defining the product backlog into smaller and smaller subsets of work. That is structured in a top-down manner. At the lowest level of the product backlog, the work elements or requirements can be prioritized and assigned to teams. The self-organizing teams pull work from the project backlog and work the tasks to completion in a series of short, time-fixed Sprints or iterations. Sprints are often from 2 to 4 weeks long (EVM vs. Agile Project Management, 2016).

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1.1. Challenge – how to monitor earned value in Agile project

The real challenge in software projects managed in an agile way is how to track and control the execution of the project. How to monitor the project status and, depending on the condition, perform specific corrective measures.

Moreover, the agile methodology doesn't define how to follow up and track the costs to evaluate ROI information. Usual metrics in iterations, such as burn-down and burn-up charts, don't provide these kinds of data.

A possible solution is the implementation of earned value management using only three basic planning parameters: velocity, estimated backlog, and cost. *Earned Value Analysis* (EVA) is a method that allows the project manager to measure the amount of work performed on a project beyond the basic review of cost and scheduled reports (Ghosh, 2015).

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EVM would identify schedule (SV) and costs variances (CV) as well as trends (SPI and CPI).

Critical parameters used as part of the EVM are presented in Table 1.

Table 1. Vocabulary of the EVM

Abbreviation	Name	Description
BAC	Budgeted at Completion	The original planned cost of the project
EV	Earned Value	The value of the project's throughput.
AC	Actual Cost	The amount of money spent during a time
PV	Planned Value	The planned value of the project's throughput.
CV	Cost Variance	The difference between the value of the throughput and the cost to produce it.
SV	Schedule Variance	The difference between the value of the project's throughput and the planned value of the project's performance.
CPI	Cost Performance Index	An efficiency indicator for measuring the value of the project's throughput produced by each unit of the actual cost.
SPI	Schedule Performance Index	An efficiency indicator for measuring the rate at which the project's throughput is meeting initial schedule expectations.
EAC	Estimate at Completion	Projection of the total project cost at completion.
ETC	Estimate to Completion	Projection of the remaining funds required to complete the project.
VAC	Variance at Completion	Projection of the difference between the budgeted cost and projected actual cost of the project.

Successful utilization of EVM is dependent on the early determination of project baselines (such that BAC and PV are easily identified) as well as on the ability of the organization to record and retrieve actual progress made against the project and being able to report on actual costs incurred to make this progress happen (Ghosh, 2015).

2. METHODOLOGY

In this article, we have analyzed the possible implementation of EVM on the fixed priced project with fixed scope (Kamphorst et all, 2018; Rai & Mehta, 2014; Atanasijević, 2016).

- To establish the initial baseline, we have used the following data points:
- The number of planned iterations;
- The total number of story points;
- Planned budget.

In the following sections, we will apply the approved EVM approach to a set of data from real projects to confirm the starting hypothesis (Atanasijević et all, 2019; Atanasijević et all, 2010; Dragićević et all, 2013; Atanasijević, 2019).

3. RESULTS

Our planned budget is equivalent to Budget at Completion parameter (BAC = 82,000€) which will be used in further calculations.

Based on these inputs, we could create the graph shown on Figure 1.

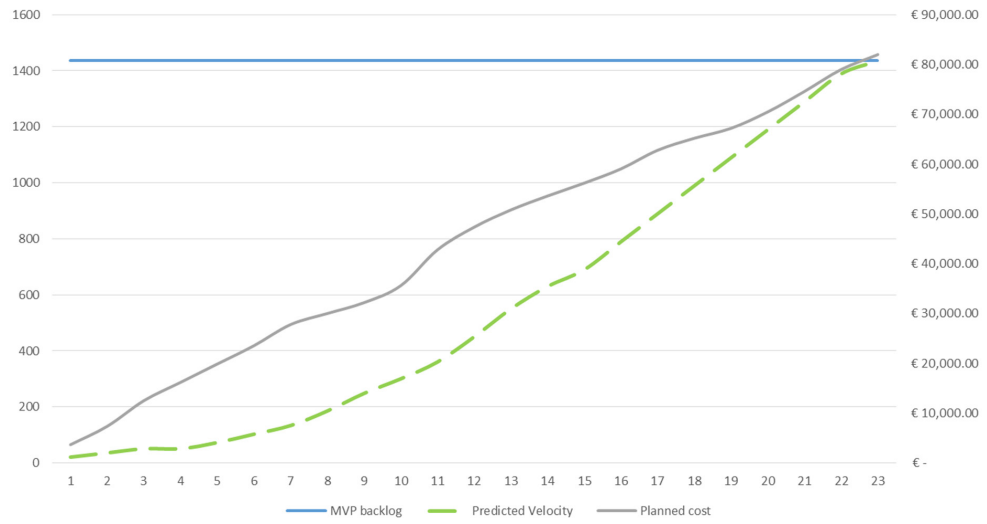

Figure 1. Scope, cost, and schedule projection

In the graph are presented baselines for costs and scope.

For further calculation of EVM parameters, we were looking for the following measurements:

- The number of story points completed;
- How many iterations we have achieved;
- Actual cost.

After adding these *metrics*, we could get a better insight into project performance comparing with the original plan. What could be seen from the graph is that after 13 iterations, we are facing an inevitable delay in delivery and that we are spending more than initially planned?

To *quantify* schedule and cost variance first, we need to determine earned value. The two parameters without which EVM calculations cannot proceed are the Actual Cost for the Iteration (AC) and the actual number of points complete. In our case AC = €31,406 and the number story points completed is 405.

Earned value presents how much work was actually completed during a given period of time. It's derived by measuring actual work completed at a point in the schedule.

Since we have delivered 405 SP of 1436 SP it means that we have delivered 28% of the planned scope by the end of iteration 13. That means that our earned value is equal to 28% of the predicted budget (23,127€).

Schedule variance is the difference between earned value and planned value:

SV = EV – PV = 23,127€– 31,406 €= - 8279€

In the same way, we could determine our cost variance. *Cost variance* presents the difference between what was expected to be spent and what is actually spent. Cost variance is then calculated:

CV = EV – AC = 23,127€ - 57,890€ = - 34,763€

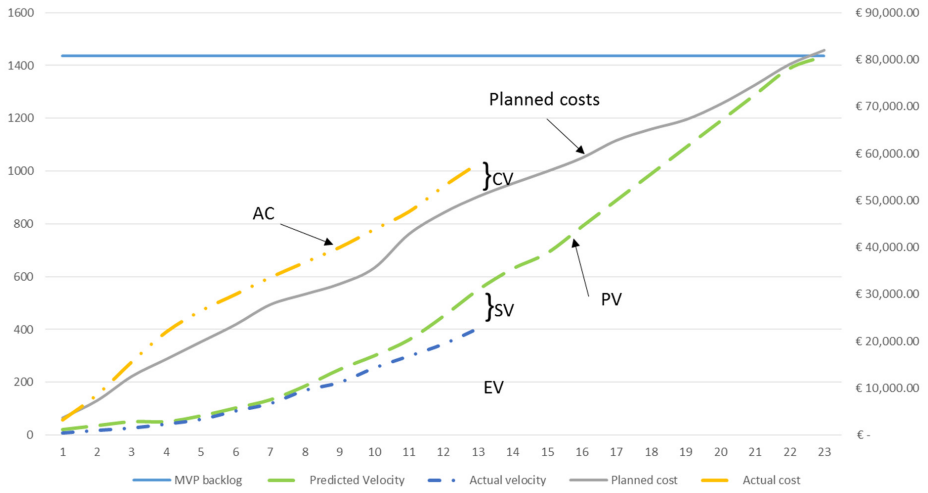

Figure 2. Scope, cost, schedule projection and performance

After determining schedule and cost variance we wanted to see what efficiency indicators, such as cost and schedule performance indicators, would indicate to us.

Cost performance index (CPI) shows how efficiently we are spending our budget compared to how efficiently we planned to spend them. It is calculated by dividing the Earned Value by the Actual Cost. In our project CPI would be:

CPI = EV/AC = 23,127€ / 57,890€ = 0.4

Table 2. Decision table based on CPI index value

CPI < 1	CPI = 1	CPI >1
Over budget	On the budget	Under budget
EV < AC	EV = AC	EV > AC

Based on Table 2, a CPI of 1 would indicate that we are spending our budget to accomplish work at the rate that we had originally planned to spend it. A CPI less than 1, such as in our case, means that we are over budget by spending our budget less efficiently than planned. The reason for this is that our Earned Value is less in comparison with the Actual Cost.

The Scheduled Performance Index (SPI) compares Earned Value with Planned Value and is calculated by dividing the Earned value with Planed value:

SPI = EV / PV = 23,127€ / 31,406 € = 0.73

This means we were 27% behind the schedule.

The analysis of the SPI is comparable to the CPI analysis, Table 3.

Table 3. Decision table based on SPI index value

SPI < 1	SPI = 1	SPI >1
Over budget	On the budget	Under budget
EV < PV	EV = PV	EV > PV

The Estimate at Complete present valuable input as a forecast of the total amount that we will need to spend to complete the planned work, based on the actual work progress and trends. EAC calculation is to divide the Total Budget by the Cost Performance Index:

EAC = BAC / CPI = €82,000 / 0.4 = € 205,000

This means that our original budget will extend 2.5 times than originally planned if present trends continue.

In same manner we have calculated the total number of iterations at completion, by dividing total number of planned iterations with calculated SPI.

E (total # iterations) AC = 23 / 0.73 = 32

From the iteration/sprint perspective, the usual tracking tool for monitoring progress is the burndown chart. “A burndown chart is a graphical representation of work left to do versus time” [2]. It is a graphical display of how quickly the team is working through the estimated and planned work. On the vertical axis is shown the quantity of remaining work, while the time is placed horizontally on the chart.

Burndown charts can be applied to any project containing measurable progress over time.

The burndown chart is beneficial for several reasons:

- monitoring the project scope creep,
- keeping the team running on schedule,
- comparing the planned work against the team progression.

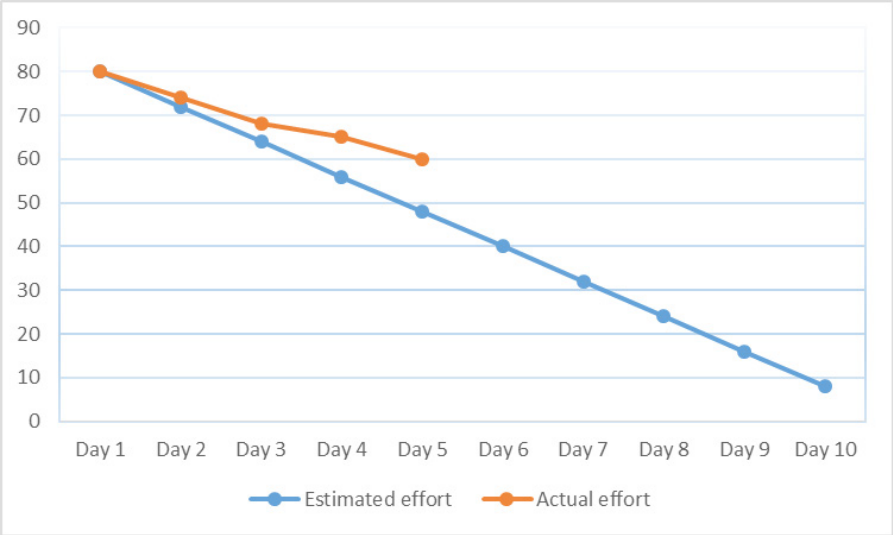

Figure 3. Burndown chart

4. DISCUSSION

As we look closely at *Figure 3,* we could see that the team is on halfway through the sprint and a slight delay in progress is occurring. If we consider that our EV is equal to 20SP and PV 32SP by simple calculation of schedule variance (SV) and performance index (SPI) we could actually quantify this delay.

SV = EV – PV = 20 SP – 32 SP = - 12 SP

SPI = EV/PV = 20/32 = 0.62

In the middle of sprint, we were 38% behind the schedule.

Analogue to the previous example we have calculated how many days in addition we would need to complete originally planned work if we have continued in same trend of progress.

Since our team worked in two-weeks sprints, which is equivalent to 10 working days, dividing with SPI:

EAC = 10 / 0.62 = 16

It is not a custom to perform cost analysis on the level of sprint but it is also possible

Our planned budget (BAC) for this iteration was estimated on 3600€, based on the number of present team members and man-day costs. Since total number of story points for this sprint was 80 it appears that value of one-story point is equivalent to 45€. Based on that we can simply calculate our EV in monetary value.

EV = 20 * 45€ = 900

With this parameter we can perform other EVM calculations:

CPI = EV / AC = 900€ / 1800€ = 0.5

EAC = BAC / CPI = 3600€ / 0.5 = 7200€

In the previous discussion, the usefulness of Earned Value Management (EVM) concept for Cost and Schedule variances within fixed-price projects, suggests how to manage costs in pre-agreed Delivery Cycles and also guides Project Managers for certain actions to address this issue. The utility of a scenario and action-based approach will help improve project performance as demonstrated through a real-life case, where the project was rescued using this approach.

5. CONCLUSION

The above example represents a basic implementation of EVM. The results above demonstrate how this simple approach can deliver an effective measuring of project performance and progress in an objective manner within an Agile development environment.

Earned Value measurements are excellent indicators that can be communicated to all project stakeholders, including the development team, so they gain a better understanding and insight into the financial impact of their performance (Ghosh, 2015; Atanasijević et all, 2019; Atanasijević et all, 2010).

Also, a Project Manager who is responsible for the financial performance of the project utilizes EVM as part of his or her project management toolkit to take better pro-active actions to steer the project in the right direction (Dragićević et all, 2013; Atanasijević, 2019).

Using these simple performance metrics in conjunction with typical Agile metrics (the Iteration burn-down and release burn-up charts for example) provides objective analysis for sharing with teams, management and customers. EVM metrics indicate early warnings validating that release plans should be changed and provide a business the opportunity to make priority trade-off decisions as early as it can in the project lifecycle.

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ETHICS COMMITTEES FOR CORPORATE CULTURE OF SUSTAINABILITY

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Abstract: *This theoretical paper considers the role of ethics committees in the promotion of business ethics and corporate culture of sustainability, and aims at contributing to the debate about the leadership role of board of directors as a real source of competition in global markets. Ethics committees within the boards can support leaders' commitment to corporate social responsibility, encourage stakeholder protection, reinforce the board's expertise about ethics and sustainability issues and safeguard the independence of decision-making processes in situations characterized by potential conflicts of interest. This paper could also have practical implications, encouraging policy makers to translate the good practices in managing corporate sustainability culture into actions and sending a message to investors sensitive to environmental, social, and governance (ESG) aspects. In fact, the establishment of ethics committees could be an indicator about the degree of maturity of corporate sustainability culture for investors and stakeholders in general.*

Keywords: *Business ethics, Corporate social responsibility, Board of directors.*

1. INTRODUCTION

The corporate scandals of recent decades highlight a scarce ethical orientation by companies, together with the essential inability to manage relations with broad stakeholder categories. In fact, while some failures were the result of fraudulent accounting and other illegal practices, many of the same companies exhibited real corporate governance risks such as conflicts of interest, inexperienced directors, excessive directors' remuneration, or the unequal share of voting rights (Anderson & Orsagh, 2004; Arjoon, 2005; Salvioni, Gennari, & Astori, 2015).

Corporate governance standards, starting from the Sarbanes Oxley Act, focus, inter alia, on board structure, with the aim of strengthening the safeguarding of minority shareholders and other stakeholders. Corporate governance systems, according to the agency theory (Fama, 1980; Jensen & Meckling, 1976; Ross, 1973), are based on a proxy tie between shareholders and corporate governance bodies (OECD,1999). The board is empowered by the shareholders to define and realize goals and strategies that safeguard their interests, and the board structure and composition is one of the mechanisms to mitigate the so-called agency conflicts (Bathala & Rao, 1995; Daily, Dalton, & Cannella, 2003; Eisenhardt, 1989; Jensen, 2000; Weisbach, 1988; Zahra & Pearce, 1989).

The shareholder view (Friedman, 1962) has emphasised for a long time the dominance of economic responsibility in satisfying the financial expectations of shareholders. This often means excessive stress on short-term results for boards of corporate governance systems characterized by wide dispersed ownership (so-called outsider systems), with the aim of obtaining positive judgements from the financial market and reconfirming their position. This attention to short-term performance could be the cause of unethical conduct by boards oriented towards personal or relevant shareholders' interests to the detriment of other stakeholder categories. In the same

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way, unethical and fraudulent action in corporate governance systems with concentrated and stable shareholding (so-called insider systems), are often caused by the will of majority shareholders, usually members of the board, to focus on economic performance over time, increasing the company's value in terms of personal assets.

Stressing the economic dimension in corporate goals and actions can imply the board structure is not an effective controlling mechanism for managing agency conflicts and avoiding scandals. Byrne (2002) noted that in the post-Enron and post-bubble world, the realization that many companies played fast and loose, allowing performance disconnected from meaningful corporate values, was leading to a re-evaluation of corporate goals, values, and purpose. The economic and financial disasters led to a new corporate model in which corporate culture puts greater emphasis on ethics, integrity and trust (Arjoon, 2005).

Such changes include the triumph of Corporate Social Responsibility (CSR) principles and sustainability values (Gladwin, Kennelly, & Krause, 1995; Elkington, 1998), which, together with the enhancement of stakeholder perspective (Freeman,1984; Freeman, 1994; Harrison, Bosse, & Phillips, 2010; Freeman & Dmytriyev, 2017), emphasise the concept of global corporate responsibility. According to this approach, corporate goals defined by the boards should involve clear awareness of the responsibilities towards different stakeholders, adopting methods and tools of governance aimed at improving economic, social, and green/eco-friendly performance.

To this regard, the effectiveness of corporate governance depends on the members of boards that should be able to manage the equilibrium between short-term and long-term chances of company survival, positively valued by the stock market. Board structure has been extensively studied as a factor determining a higher or lower corporate orientation towards social responsibility and sustainability (Driscoll, 2001; Zhang, Zhu, & Ding, 2013) being capable of managing the complexity along the so-called 'triple bottom line', and the establishment of dedicated committees within the board can be a further guarantee that stakeholders' interests are considered in a balanced way, preventing and managing potential conflicts of interests among them and with managers. The establishment of board committees encourages stakeholder protection, reinforces the board's expertise and commitment and safeguards the independence of decision-making processes in awkward situations (OECD, 2015). National binding laws (e.g. Sox, 2002; the Swedish Companies Act, 2006; Portuguese Law 76-A, 2006), international institutions (e.g. the OECD, the United Nations with Global Compact initiative, the ICGN, the European Commission) and national market regulators have governed board committees, with particular focus on audit, nomination and remuneration committees because of the high risks of conflicts of interest characterizing these areas. Clearly, the management of conflicts of interests by the aforementioned committees assumes ethical implications, having positive effects on relations with stakeholders and long-term sound corporate development.

Globalization and the emergence of the concepts of corporate social responsibility and sustainable development have undoubtedly underlined the need for the institutionalization of business ethics. This has gradually led to the diffusion of certain ethics committees, rarely as a legal requirement and more frequently as a recommended self-discipline practice or autonomous corporate initiative.

Sharing the concept that companies need leadership commitment to become sustainable (Eccles, Miller, & Serafeim, 2012), we first focus on the influence of board structure on corporate social performance (CSP). We acknowledge that the board affects corporate performance through its

goals and decisions, but we share the limitations of input-output methods that attempt to identify a direct and measurable relation between board structure and the social dimension of corporate performance. For this reason, we suggest a different perspective, focusing on the board structure for the promotion of a corporate culture inspired by CSR.

Then we discuss the ethics committees. Scholars and regulators have paid very little attention to such committees but, in this void, companies are submitting themselves to self-regulation to shape actively their future and to create their own conditions for success and sustainable development in global markets. These corporate efforts can be considered voluntary investments in the governance decision-making process, which means investments in sustainable and long-term success (Lin-Hi & Blumberg, 2011). Finally, we make some considerations. Globalization is gradually changing the traditional performance indicators; monitoring committee boards can provide important information to investors and market regulators on how companies are moving towards ethics and sustainability.

2. BOARD STRUCTURE AND CORPORATE CULTURE

Ongoing debates about the relations and overlapping between corporate governance and CSR have become a priority for companies and policy makers. Since the board is responsible for the corporate goals and internal processes promoting the achievement of these goals in the organisation, scholars, international organisations, regulators and politicians have focused on the relationship between board structure and sound governance, considering in particular the presence of non-executive and independent members and the separation of CEO and Chairman position as a means to guarantee an objective judgement capacity for the protection of the interests of minority shareholders and other stakeholders.

The most popular approach in the study of board effectiveness has been to relate board composition to various measures of firm performance (Bathala & Rao, 1995; Rao & Tilt, 2016): if boards are capable of controlling agency problems and enhancing value for stakeholders, this should result in better corporate performance, in the short as well as the long term. The measurement of a board's commitment to social responsibility includes environmental and social output, in addition to financial considerations (Haugh & Talwar, 2010; Prahalad & Hammond, 2002).

Some scholars have found positive relationships between the number of outside, independent directors and Corporate Social Performance (CSP), in terms of employee orientation (Wang & Dewhirst, 1992), philanthropic activities (Ibrahim & Angelidis, 1995; Ibrahim, Howard, & Angelidis, 2003), environmental standards and product quality (Johnson & Greening, 1999). Vice versa, Surroca and Tribò (2008) and Bear, Rahman, and Post (2010) affirm that diversity of directors' resources (insider directors with expertise in corporate strategies and operations and outsider directors with expertise in monitoring and advising) is not directly associated with social ratings. Also, Zhang et al. (2013) do not offer significant results to support the positive effects of the number of outside directors on a firm's reputation in the industry. Other scholars show neutral findings (McKendall, Samchez, & Sicilian, 1999; Wang & Dewhirst, 1992).

The lack of clear evidence of a direct relationship between board structure and CSP is not entirely surprising; in this regard, other scholars have considered corporate performance to be a function of a number of other factors (Bathala & Rao, 1995). This research approach, called the input-output model (Pettigrew, 1992), attempts to link the board structure (input) directly to company perfor-

mance (output), ignoring the processes involved in the board's performance of its tasks (Dalton, Daily, Johnson, Ellstrand, 1999; Forbes & Milliken, 1999; Gabrielsson & Huse, 2004; Golden & Zajac, 2001; Macus, 2008). A number of factors, primarily determined by the structure of ownership, the characteristics of corporate governance systems, the structure and values that dominate the board and the ability to transfer them to the organisation, heavily influence business behaviour. The limitations of the input-output model lead us to change perspective, or at least to consider the input-output model together with an additional perspective, linking board structure with its potential power to promote a corporate culture inspired by social responsibility and sustainability. Whilst the damaging consequences of a negative (unethical) corporate culture are widely discussed, there are not many discussions focused on culture as a driver of sustainability (BlackSun, 2017).

Corporate culture, defined as ways of thinking, values and beliefs that influence people's behaviour (Green, 1988; Kerr and Slocum, 2005; Kluckhohn & Strodtbeck, 1973) can be considered the real drive behind a board's processes. Authors have argued that corporate culture, instead of management technique, is the key to corporate excellence (Deal & Kennedy, 1982; Peters & Waterman, 1982). It is corporate culture, rather than strategy, that is the key to understanding an organisation's success. If the culture is right, then the right strategy will emerge or will be implemented; in this sense, culture is one of the key immaterial factors of success (Brondoni, 2010; Green, 1988;). Companies themselves declare that culture is one of the most important immaterial factors of value creation (BlackSun, 2017).

Changes in corporate culture start at the leader level and leadership commitment allows companies to become sustainable (Eccles, Kathleen, & Serafeim, 2012). According to Eccles et al. (2012), this cultural shift is not immediate, but the path to a sustainable company considers two ongoing stages: the first involves reframing the company's identity through leadership commitment and external engagement; the second involves codifying the new identity through employee engagement and mechanism of execution. For Marlow, Beale and Burn (2010), the corporate pathway to sustainability consists of gradual steps from compliance, focusing on the reduction of risk, through the integration of sustainability into business strategy, to full commitment to sustainability, with the aim of improving the overall wellbeing of the company, community and environment.

According to these views, the presence of dedicated directors within the board can be considered a visible manifestation (Schein, 1984) of the culture of sustainability, a tool to promote and monitor the spread of ethics and the sharing of the triple bottom line in all the behaviours of an organisation. In more complex organisations, effective liability management may also be supported by the adoption of a plan of ethical corporate culture, with the appointment of an Ethics Officer (EO) or a Chief Sustainability Officer (CSO), and the creation of a Social and Ethics Committee (S&EC).

3. ETHICS COMMITTEES. A LITERATURE REVIEW

All over the world, corporate governance bodies foresee the establishment of internal committees, usually made up of independent members. The most widely used committees are those of risk management and audit, remuneration and nomination. By affirming the principles of social responsibility and sustainability, companies more conscious of the importance of the spread of a culture of ethics have also begun to introduce committees for this purpose.

The increase in number of ethics committees is an indication of the board's desire to promote ethically accountable behaviours and implementing initiatives to increase the awareness and

importance of corporate social responsibility in all players of the organisation (Gennari and Salvioni, 2019). Therefore, the existence of social and ethics committees is expected to have a positive impact on corporate governance and it is recommended by numerous researchers (Sims, 1991; Singh, 2011; Weber, 1981; Wood, 2002).

The main purpose of the social and ethics committee is to review and recommend to the management and board of directors objectives, policies and procedures that serve the company's interest to maintain a company committed to high standards of ethics and integrity, legal compliance and integrated corporate responsibility. There are good reasons for the establishment of an ethics committee within a board (Purcell, 1982). First, the committee gives emphasis and visibility to the structuring of ethical issues, as a significant instrument holding management accountable for its administration of the company. Such a committee can be a significant aid in diffusing CSR culture throughout the organisation and obtaining corporate legitimacy within the community. In fact, this committee should ensure the establishment and formalization of policies on corporate ethics and codes of ethics provide the actual practices and documents that are to be monitored, extended or revised over time. Furthermore, ethics committee can contribute to the board's decision-making processes, according to a long-term value creation approach.

The typical activities carried out by ethics committees are: planning an ethics program that usually includes the proposal and updating of the Code of Ethics, the review of results, the assessment of resource allocation, the monitoring of company activities with regard to social and economic development, good corporate citizenship, environment, health and public safety, stakeholder relationships (Deloitte & Touche, 2014; Felo, 2001). In addition to than these tasks, considering that due diligence towards social responsibility can create, in the short term, potential conflict between the shareholders' immediate profit expectations and the long-term creation of value, the presence of ethics committees helps to solve such trade-offs. Where trade-offs exist, the CSR approach recommends prioritizing the long-term sustainable creation of value as fundamental to a company's future life and success, promoting the creation of stakeholder value (shareholders included) over time.

Well-structured ethics committees (also referred to as conduct, corporate responsibility, CSR, sustainability committees and so on) not only serve as a critical coordinating function, but they can also steer a CSR strategy to becoming a competitive advantage, acting as a mediator among possibly conflicting interests. Furthermore, in this case, the board's commitment to value creation in the long-term is more visible to financial markets and external stakeholders than when the responsibility for social issues is assigned to other committees (audit, remuneration) or to the board as a whole.

The importance of ethics committees increases in the light of the UN 2030 Agenda for Sustainable Development, with its 17 goals to be reached in the coming years: committee members should promote the consideration of these goals in the board discussions about corporate objectives and strategies, focusing on a fair balance between opportunities and risks. In fact, sustainability risk management has also become a crucial issue, as corporate strategy now must ensure that sustainability policies and impacts do not deflect the achievement of primary business objectives (Salvioni et al., 2016; Burke, Hoitash & Hoitash, 2017; COSO, 2017; Gennari, 2019).

Nevertheless, little attention has been paid to ethics committees until recently, and the majority of interventions are in the area of self-regulation. Some market regulators (stock exchanges supervisors, government commissions, associations of particular categories of stakeholders, etc.) promote the formation of these committees by means of self-discipline codes that often follow

the 'comply or explain' principle, which means that companies have to justify non-compliance with the code when they fail to meet certain requirements. There are exceptions, such as South Africa and India, where the establishment of such a committee is mandatory by law.

Ethics committees have been debated in literature in the past, with greater focus in the last twenty years. Many studies have attempted to find a direct association between the existence of such committees and performance outcome (Baxter, Bedard, Hoitash, & Yezegel, 2013; Beasley, Berrone & Gomez-Mejia 2009; Conyon & Peck 1998; Klein 1998; Rodrigue, Magnan, & Cho, 2013; Uzun, Szewczyk, & Varma, 2004; Walls, Berrone, & Phan 2012), but this is not our intended perspective.

The increasing presence of ethics committees is proved by some studies: Spitzeck (2009) indicated that there has been an increasing trend in forming corporate responsibility committees in the CSR Index (CRI) in the UK; Eccles, Iannou, and Serafeim (2014) found that US companies with high sustainability adopt such a committee; Burke, Hoitash, and Hoitash (2017) found that sustainability committees in public companies became increasingly prevalent over the period 2003–2013. In addition, practitioner publications (Calvert Asset Management & The Corporate Library, 2010; Institute of Business Ethics, 2016) have reported the increasing presence of sustainability committees. However, these results are not sufficiently comforting: research by Kiron et al. (2015) shows that only 22% of managers perceive that their boards provide substantial oversight on sustainability issues, confirming the results of the UNEP Integrated Governance report (2014) of 2011 Bloomberg corporate data on 60,000 businesses.

For Miller and Serafeim (2014), the way the authority and responsibilities for sustainability differ across organisations indicates the stages of sustainability commitment. During the *compliance stage*, the point when most companies first engage with sustainability, companies do not have a formal chief sustainability position and those primarily responsible for sustainability have a wide range of responsibilities, but are not positioned at high levels of authority. The activities are neither strategic nor centralized. During the next stage, called the *efficiency stage*, companies begin to focus on how they can respond to stakeholder pressures, legitimizing sustainability by means of internal stakeholder engagement. The ultimate responsibility for sustainability is assigned to the Chief Executive Officer (CEO) who works in partnership with the new Chief Sustainability Officer (CSO) to develop strategies and educate the organisation to sustainability. The last stage is the *innovation stage*. The strategies become market-driven and the ultimate responsibility for sustainability shifts from the CEO to the CSO accordingly; the incidence of the board having a special committee on sustainability increases dramatically.

Gennari and Salvioni (2019), analysing more than 22,000 boards of European companies in 2000-2016 found that the number of companies with social and ethics committees gradually increases from 2.46% to 6.70% and the committees' names developed. In particular, the word 'sustainability' becomes the most recurrent word in the committee names from 2010. Up until then, the terms ethics/ethical prevail, examining the big business scandals such as Enron, WorldCom, Ahold, Parmalat and the financial crisis that began in early 2000 and the consequent need for companies to recover the confidence of stakeholders. The concept of sustainability starts to spread at the end of the first decade of the 2000s, also in consideration of the great emphasis first placed first on concepts such as business ethics and CSR, and then on the stakeholder model, sustainability and the triple bottom line. In any case, the word ethics or ethical continues to be used very frequently, showing a correspondence between corporate ethical behaviour and corporate legitimacy to operate. It is also worth

pointing out that, as a first stage, businesses tend to separate the aspects of social and environmental responsibility and link ethics predominantly to compliance. Subsequently, a broader concept of social responsibility has emerged, understood as the liability of companies for their impact on society, where compliance and the internal diffusion of ethical culture are the relative prerequisites. Furthermore, the Authors, according with the institutional theory, examined the relation between external country-variables and the establishment of CSR committees confirming that the only variable impacting on such committees is the mandatory non-financial disclosure ex Directive 2014/95/EU.

4. DISCUSSION

Starting with the existing literature, we aim to contribute to the debate on the importance of ethics committees as tools to promote the continuous commitment of the board to ethical and sustainability issues. The presence of special committees is of dual advantage: externally, it can serve as an important message to stakeholders about the management of social responsibility; internally, it expresses the progress of sustainability culture into corporate levels. Corporate culture should be considered a critical, primary intangible factor for the long-term creation of value and for competitive advantage (Salvioni, Franzoni & Gennari, 2016); for this reason, it should be formalized, monitored and managed. This vision combines the traditional focus of corporate responsibility on the measurement of external impact with the focus on what drives behaviours within the organisation. Furthermore, committees can play a useful role in identifying, on behalf of the board, problems and patterns of behaviour that may indicate risk (Institute of Business Ethics, 2016).

Based on these considerations, we think that our paper can contribute to keep alive the international debate on corporate ethics and the role of boards committees for a sound and sustainable corporate governance. In general, the cultural issue should be debated further. When the culture becomes a critical intangible factor of competitive success in global markets, ethics committees should provide key performance indicators to measure and monitor corporate culture, together with socio-environmental indicators expressing the multidimensionality of performance across the triple bottom line. In other words, committee tasks should go beyond the recommendation of sustainable strategies to the board; ethics committees should engage dedicated directors to support dialogue between the board and the figures responsible for internal control systems aimed at spreading the board's goals within the organisation. The contribution of ethics committees extends to external relations with key stakeholders, since such committees can design, together with the Investor Relations function, the information architecture to comply with the change in the mandatory disclosure of the different EU countries deriving from the 2014/95/EU Directive on non-financial and diversity information.

We suggest integrating the traditional literature review about the effects of CSR on company performance with a perspective that focuses on creating and strengthening a strong corporate social culture. This culture of sustainability and the creation of shared value in the long-term, thanks to risk reduction and exploitation of opportunities by means of continuous and bidirectional relations with stakeholders (stakeholder engagement), is an intangible and unique driver for success in global markets. In fact, global markets have replaced the traditional markets of 20th century industrial systems, introducing new development models, relations between companies and institutions and market relations. In this environment, companies develop complex models of competitive interaction and long-term corporate success is conditioned more by the level of sophistication of the intangible assets than corporate culture (Brondoni, 2010).

This debate could also have practical implications, encouraging policy makers to translate good practices in managing corporate sustainability culture into actions. The regulators can be passive and let sustainability emerge as the result of market dynamics. Alternatively, regulators can choose to introduce mandatory (to stimulate fast cultural change) or self-disciplinary measures, promoting continuous dialogue among involved actors. In this sense, a significant boost could come from the UN Agenda 2030 that defines Sustainable Development Goals (SDGs) and explicitly sustains joint action among the institutional, civil and business world. Other measures could be the introduction of incentives for companies to encourage the adoption of certain behaviours, the proposal of voluntary guidelines with reference to international standards, the transfer of regulatory powers to self-regulating authorities, such as stock exchanges. All these rules should promote cultural changes when they are coherent with the national historical, social and economic background, as well as the transposition of international principles. The respect of laws and recommendations cannot provide the expected results when it is perceived by companies to be mere and formal compliance activity. The value of compliance should be embedded into the corporate culture, as a shared principle that guides the behaviour of the entire organisation and constitutes the basis for managing any type of risk related to global corporate responsibility.

Finally, we would like to send a message to investors in consideration of both sustainability performances and indicators. The corporate structure, in terms of board committees, can be one of these indicators, providing information on the leadership commitment to including CSR in the corporate goals. Where there are trade-offs among the interests of different stakeholders, the CSR approach recommends prioritizing the long-term sustainable creation of value as fundamental to the company's future life and success. The foundation of ethics committees and their composition could be a clear indicator of the degree of maturity of the sustainability culture of a company for investors and stakeholders in general.

The story of social and ethics committees is a story about how CSR issues should be expressed and managed in the interest of stakeholders. The task for corporate governance bodies and organisations is not easy and has short-term results, but the direction of travel seems right.

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IMPACT OF ADMINISTRATIVE BARRIERS ON THE SUCCESS OF EU PROJECTS

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Abstract: *Support by means of projects supported by the EU Cohesion Policy is, in less developed regions of the EU, often a key source of financing of development. From this viewpoint, it is very important to ensure its efficient and effect use. A frequent problem in the effort to achieve such use is administrative barriers. The purpose of this article is to identify the effect of such barriers in the process of filing applications for the support in the case of Slovak Republic. The survey was carried out in the form of questionnaire among applicants for the support. The survey has shown that such barriers are perceived as a significant issue but do not pose a barrier leading to selection of other projects just because the applicants with good projects are not able to cope with such obstacles.*

Keywords: *Cohesion policy, Projects burden, Slovak Republic, Programming period.*

1. INTRODUCTION

European structural and investment funds are EU tools intended for helping regions, in particular, the less developed ones. Importance of this financial aid for the Slovak Republic is, however, expressed not only in the absolute amount of funds but also by their share in the total amount of public investments. In the Slovak Republic, more than 80% of all public investments are funded by the EU funds. It is undoubtedly a high figure (one of the highest ones in the entire EU), which expresses a significant dependence of the national economy in this kind of aid.

A large part of the support is carried out by means of individual projects. The success rate of the project, by means of which operational programmes and objectives of the Cohesion Policy are implemented, is closely related to access and use of such funds by different target groups for which they are intended. We mean, above all, applicants and beneficiaries that are local government authorities, businesses, NGOs and state administration authorities, which prepare, submit and implement projects funded by EU funds. The success rate of projects depends on several factors, whereas, one of the important factors is administrative restrictions. Such restrictions can occur at several levels. Some studies deal with administrative restrictions on the part of providers or recipients of support (Milio, 2007; Lorvi 2013), where they point out at insufficient administrative capacities, both quantitative and qualitative. Another issue is the necessity to return funds as a result of administrative errors (EDA, 2018), which can be even threatening to existence for certain applicants, especially from among NGOs, and discourages them from further submitting projects or they deem it too bureaucratic, especially if they achieve their set goals of projects and corrections result from legislative and/or administrative requirements.

Another frequently mentioned factor is legislative and administrative restriction or obstacles perceived by applicants for projects. A frequent reservation is a useless quantity of documents neces-

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sary to filing projects and extensive documentation for submitting projects (Kostálová et. al, 2015; Zimmermannová and Brown, 2015). Several studies and reports point out at the need to simplify certain processes, focus more on outputs than on the formal administrative control or adjustment of the legislation to the needs of implementation of development projects (Barca, 2009; CKO, 2013).

The purpose of the article is to analyse how the administrative burden is perceived by applicants and beneficiaries of aid in Slovakia and if the legislative and administrative burden have influence on the success of projects in the stage of their preparation.

2. ADMINISTRATIVE BURDEN IN SLOVAK REPUBLIC

Preparation of each programming period and the process of setting rules for implementation of EU funds includes intensive communication of the Member State with EU authorities (in particular, with the European Commission). The first official step is the preparation of legislative measures by which the European Commission will introduce its vision and forms of implementation of the Cohesion Policy. However, a relevant factor for a Member State is a more particular view or evaluation of its strengths and weaknesses, which are defined, with regard to implementation of EU funds, as presented by the European Commission, in the so-called Position Paper (EC, 2012). In respect to the Slovak Republic, this document was adopted in 2012, thus, two years prior to the official "launch" of Programming Period 2014-2020. Besides evaluation of different fields of the national economy, this document also focused on the field of administrative difficulty and its unification in the preceding Programming Period 2007-2013.

The fact that the European Commission pays attention to the administrative burden is also reflected in the fact that the Position Paper contains a separate chapter on this matter. Thus, the European Commission put the administrative difficulty of the very process of implementation to the level of other key matters, such as solutions for road and rail infrastructure, environment, unemployment, education and research and innovations. In the Position Paper, the European Commission defined, as one of its main recommendations for reducing administrative burden, the need to simplify the process of projects approval, clear setting of implementation rules and their publication sufficiently in advance, application of the so called simplified cost options, electronic data exchange and regular assessments of the administrative burden for applicants. Regarding the administrative burden reduction, similarly to other policies, the legislation of the EU for Programming Period 2014-2020 introduced several innovations and improvements. One of key measures was introduction of mandatory electronic communication between state authorities and beneficiaries before the end of 2015. It was the system of called mandatory eCohesion coined in the General Regulation (EU) No 1303/2013 of the European Parliament and the Council, in particular in Article 122(3), in the sense of which "Member States shall ensure that no later than 31 December 2015, all exchanges of information between beneficiaries and a managing authority, a certifying authority, an audit authority and intermediate bodies can be carried out by means of electronic data exchange systems". EU authorities expected this obligation to not only simplify the entire process of implementation but also to increase the level of transparency that is directly assumed by the "contactless" relation between applicants and state authorities. From among other simplifications, we can mention extended use of the so-called simplified cost options. It means that expenditure in implemented projects are reported only in the form of a flat rate amount without the need to report actual accounting documents. It is also necessary to not mention another innovation brought about by the new legislation for Programming Period 2014-2020, which is the direct use of EU funds from the so-called technical assistance for the purposes of simplifying

processes on the part of applicants and beneficiaries. Also, in this way, the European Commission wanted to point out at the necessity to deal with the administrative burden at the level of Member States, whereas it is possible to use money from EU funds directly.

3. SLOVAK MEASURES IN THE FIELD OF REDUCING ADMINISTRATIVE BURDEN

The place of the first summarisation of measures aimed at reducing the administrative burden in Programming Period 2014-2020 is the Partnership Agreement (2014). It is a document of strategic nature in which member states specify main direction and areas of support from the EU funds and it is subject to approval by the EU authorities after being submitted by the relevant Member State. The document for the Slovak Republic was approved in 2014; besides different sectoral areas supported by the EU funds, it also defined specific measures aimed at reducing the administrative burden of the process of their implementation.

Particular measures the Slovak Republic intended to introduce in order to reduce the administrative burden were defined in Chapter 2.6 of the Partnership Agreement. Among the most important ones, let us mention introduction of aforementioned principles of eCohesion, training of administrative capacities of state authorities, extension of possibilities for the use of simplified cost options, establishment of a network of information and consultancy centres and measures aimed at simplifying the public procurement. As we can see, these are measures by means of which the Slovak Republic reflected, above all, recommendations from the Position Paper. In any case, it is possible to say that the measures in questions had the potential to ease access of applicants to the EU funds or ease implementation of already approved projects. Besides defining different measures, it is necessary, in our opinion, to also analyse the extent of their deployment. Regarding these measures, we can conclude, after an analysis, that most of them have been implemented by the Slovak Republic. Principles of eCohesion were fully implemented, by the specified deadline, to the electronic system ITMS 2014+, which enables fully electronic communication between beneficiaries and managing authorities. The system even goes further that imposed by the European legislation as it enables, beyond its framework, to use the functionality of fully electronic submitting of projects by means of accounts set up in ITMS 2014+. In respect to increasing the awareness of possibilities for acquiring EU funds, let us mention establishment of the network of so-called Information and Consultancy Centres. It is a system of 7 centres set up in premises of regional government authorities (with the exception of the Bratislava self-governing region), which are ready to provide free information about possibilities of acquiring funds or assist applicants with preparation of projects. It is a unique project funded from the technical assistance that brought the possibility of acquiring EU funds closer to citizens in regions. The system of simplified cost options was fully incorporated to the national methodology (so-called System for Management of European Structural and Investment Funds); template forms for public procurement were issued by the Public Procurement Office and, equally, a uniform system of trainings for administrative capacities at managing authorities was developed at the Office of the Government of the Slovak Republic.

4. METHODOLOGY

The survey was carried out in 2018, anonymously, by the Office of the Deputy Prime Minister of the Slovak Republic for Investments and Informatization and then sent to all applicants for the NFC from the EU funds under coordination of one of authors of the article. Altogether, 906

responses were received, which means a high rate of return at the level of 45.05% of all applicants and beneficiaries in Programming Period 2014 – 2020 at that time.

Most respondents were from Banská Bystrica, Nitra and Košice regions (18%, 16% and 15%), followed by Prešov, Bratislava and Žilina regions (11% each) and Trnava and Trenčín (9% and 8%). The legal form of respondents that provided answers to questions also reflected the legal form of most frequent applicants of beneficiaries of the EU funds. Majority of responses in our questionnaire survey came from representatives of municipalities (58% of all responses), followed by the business sector (15%), state budgetary agencies (9%), regional government authorities or their agencies (5%), NGOs (4%) and the academic sector (3%). There was also equal distribution of operational programmes, in which different respondents had experience. Due to the fact that most responses came from the local government authorities, majority of answers concerned projects in operational programmes primarily intended for the needs of the local government. In particular, OP Quality of Environment – 22%, Rural Development Programme – 20% and Integrated Regional Operational Programme – 18 %. Anyway, each of the 11 operational programmes implemented in Programming Period 2014-2020 was represented by responses.

In the second half of the survey, we analysed differences between those that got funding for their projects and those that did not. From the sample, we removed applicants with multiple projects that receive funding for some projects and were refused for other ones. Such sample would then not be statistically relevant from the viewpoint of more detailed characteristics such as region or size.

5. SURVEY RESULTS

When assessing the administrative burden, we also reviewed if it is perceived in a different way by applicants that received the funding and those that did not. There was a statistically relevant difference only for processing annexes to applications; the difference in perceiving filling in applications and the use of public procurement procedures was only minor and statistically not relevant worse compared to successful applicants. It indicates that although the administrative burden is perceived considerably negatively, probably it will not lead to not supporting good projects because of failure on the part applications to cope with the administrative burden. More detailed outcomes are provided in Table 1. A statistically more relevant difference only occurred in the preparation of annexes to applications.

Table 1. Average assessment of the administrative burden of certain processes by applicants

Activity	Average yes	Average no	Pearson Chi Quadrate Test
Performance of public procurement procedures	4.017588	4.023026	0.105
Preparation and filling in applications for the NFC	3.405276	3.449231	0.025
Preparation of mandatory annexes to applications for the NFC	3.32	3.555882	0.000

Source: outputs of the survey. Yes – applicants whose projects were supported, no – applicants whose projects were not supported

A bigger difference can be observed in answers to questions concerning availability of information, where the higher share of unsuccessful applicants indicated lack of such information. Results can be seen in Table 2. On the contrary, it indicates that the very perception of the administrative burden can be partially caused by lack of information. Applicants that do not have clear and sufficiently communicated information in advance, can then, in the final stage of the project, perceive the pressure caused by lack of information as the administrative burden.

Table 2. Assessment of availability and quality of necessary information concerning the use of the non-repayable financial contribution from EU funds in the Slovak Republic

	Insufficient	Rather insufficient	Rather sufficient	Sufficient
Yes	8	79	198	150
No	31	76	142	95

Source: outputs of the survey.

When we look at the differences in perception of the administrative burden by different groups, we did not identify differences in the perception of the administrative burden by different groups, we did not identify any significant difference based on the place of operation of applicants (regional dimension) or from the viewpoint of the size of applicants. However, the sample in this case is not representative and it is not possible to talk about statistically relevant difference. If we look at certain differences from the viewpoint of the breakdown into the public and private sector, results are shown in Tables 3 a 4. The most important difference in the perception of the public procurement (Table 3) among successful applicants was in the private sector. This sector does not always have much experience with implementation of the public procurement procedures fir to the fact that, with the exception of the projects, I tis not bound by any rules in purchases.

Table 3. Average assessment of the administrative burden related to the public procurement procedures by applicants

	Yes	No
Public sector – central government	4.02	4.333333
Public sector – local and regional government	4.19863	4.221239
Private sector	3.957447	4.173077

Source: outputs of the survey

From the viewpoint of annexes to the application (see Table 4), we can see a more distinct difference between successful and unsuccessful applicants only in the private sector, we can also see that there are not significant differences between the private and public sector.

Table 4. Average assessment of the administrative burden related to the preparation of mandatory annexes by applicants

	Yes	No
Public sector – central government	3.345455	3.6
Public sector – local and regional government	3.487085	3.458537
Private sector	3.192982	3.444444

Source: outputs of the survey

After comparing the responses to responses focused on the implementation of projects, it is possible to see more distinct differences between the private and public sector. It indicates that this sector can see the biggest problems in the implementation of projects themselves, not in applying for the support.

6. CONCLUSION

Administrative burden represents a significant problem in the perception of how the support from the European Structural and Investment Funds works. Results show that this perception is not changing in the course of time even though a lot of measures have been implemented in order to reduce such perception. There may be several explanations for it. One possibility is that also the processes declared as reduction of the difficulty can mean as its increase for certain applicants. An example of that is electronization of applications that can be viewed by people with lower level of ICT use or knowledge as reduction of the comfort in submitting projects. The second possible explanation is a shift in the perception of the administrative burden. The entire public and private sector have moved significantly forward in this direction in the past years (electronic extracts, less need to go to offices, mobile applications, etc.), so the reduction of the burden, as it was "slower" than in other sectors, could have led to negative perception by applicants.

At the same time, we pointed out at the fact that there are no significant differences between the perception of the burden between successful and non-successful applicants, as well as between public and private sector. Thus, results rather indicate the need for general activities aimed at improving the situation not the need for specific measures for certain target groups or regions that perceived the burden significantly worse.

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FINANCIAL MARKETS OF THE LAC REGION: CONVERGENCE AFTER THE FINANCIAL CRISIS?

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Abstract: *This paper aims to analyze whether the financial markets of the LAC Region converge towards integration in the post-global financial crisis period. The purpose of this analysis is to provide answers to two questions, namely, whether Latin American financial markets have increased their convergence as a result of the global financial crisis? If so, could portfolio diversification be called into question? The results suggest that after the 2008 financial crisis, Latin American financial markets showed a higher rate of convergence, measured by the correlation between regional market yields. In addition, we found convergence in the coefficient of movements between Latin American financial markets and the US, using dynamic linear models at the regional level. Specifically, we found consistent movements in market returns in the LAC Region, and the S&P 500 index, after the financial crisis. In conclusion, this type of convergence may be a sign of the acceleration of the integration process among Latin American financial markets, which may hinder portfolio diversification.*

Keywords: *Financial integration, Emerging markets, Risk diversification, Dynamic linear models.*

1. INTRODUCTION

Financial instability is a very important factor for society, since a financial crisis or stock market crash can affect, directly or indirectly, the level of economic well-being of a country's inhabitants. If a given stock market is strongly linked to the stock market of another country, the financial stability of the former depends in part on the financial stability of the latter. For this reason, a close or strong link between markets increases the levels of vulnerability to external shocks and, consequently, influences the economic conditions and welfare levels of the respective countries. The occurrence of integration between markets can have significant implications for international risk diversification (Jouini, Majdoub, and Bouhouch, 2013).

In the case of financial markets, globalisation also means transmission, comovements or contagion, notably after the breaks in the structure of international financial markets, such as the 2008 Dot-com crisis and the euro area sovereign debt crisis 2009-2011. Unlike the crises of the late 1990s, the subprime crisis originating in developed markets can be considered a truly global event that affected most financial markets and industrial sectors (Bekaert et al. 2014).

The objective of this essay is to analyze whether the financial markets of the LAC Region converge towards integration in the post-global financial crisis period. Specifically, we intend

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to answer two research questions, namely whether Latin American financial markets have increased their convergence due to the global financial crisis? If so, could portfolio diversification be called into question?

We use daily data from the most relevant indexes in Latin America and cross-check them with the S&P 500 index, in the period from 2003 to June 2012, being the sample split in two periods, 07:2003 - 12:2008 and 01:2008 - 06:2012. The results suggest the existence of synchronizations in the Latin American financial markets in relation to the U.S. market, and a higher level of comovements in the stock markets of the region after the financial crisis. This suggests a convergence of these Latin American markets, which may therefore reflect a better environment for regional financial integration.

This research adds two relevant contributions to the literature. The first contribution is related to the choice of financial markets in the LAC Region. The preference for these emerging markets is explained by the fact that they have unstable, rapidly developing economies and are therefore linked by a cultural heritage and some similar economic conditions. Additionally, these emerging markets present a financial system correlated with the financial markets, therefore, assessing the impact of the 2008 crisis on the emerging markets of the LAC Region represents a valuable opportunity to study the sensitivity of the emerging markets with the developed markets, namely that of the USA.

The second contribution is related to a direct approach, through a methodology that allows the degree of comovements between the yields of the financial markets over time to be measured. We use dynamic linear models to assess these comovements, namely the dynamic linear model: Kalman filter, Kalman smoother and Kalman forecast.

In terms of structure this test is organised into 5 sections. Section 2 presents an analysis of the State of the Art regarding articles on integration in financial markets. Section 3 provides an overview of the dynamic linear models used to verify convergence in Latin American and US financial markets. Section 4 contains the data and results. Section 5 concludes.

2. LITERATURE REVIEW

As part of the integration of financial markets, investors generally seek to include their assets in portfolios with low correlations in order to leverage the benefits of diversification (Dias, da Silva, and Dionísio 2019).

In the same context, Grubel (1968) and Levy and Sarnat (1970) argue that investment in international equity markets is motivated by the fact that the correlation between assets is lower than that observed in domestic assets. Therefore, the low correlation among international stock markets is the key factor of international diversification, but this correlation is dynamic over time, which affects the concept of risk reduction.

In recent decades, globalization has contributed to increase the correlation between international financial markets. Solnik, Boucrelle and Le Fur (1996) suggest that asset correlations have not increased. King, Sentana and Wadhwani (2006) have come up with similar results, examining the links between international markets. Chen, Firth and Meng Rui (2002), Sakthivel, Bodkhe and Kamaiah (2012) and Weber (2013) show convergence between assets and stock markets in different regions.

Abu-Alkheil et al. (2016) and Alotaibi and Mishra (2016) analyzed the level of financial integration and tested the assumptions of portfolio risk diversification. Abu-Alkheil et al. (2016) analyzed 32 Islamic stock markets and 32 conventional stock indices in the period 2002-2014. The results of the econometric tests reveal the absence of financial integration among the 31 Islamic indices, except for Pakistan. In summary, the authors suggest that the absence of financial integration among the 31 pairs of Islamic indices creates opportunities for investors to pursue risk diversification strategies. In a complementary manner, Alotaibi and Mishra (2016) examined the level of financial integration of the Persian Gulf markets in the period 2002-2013. The results propose the existence of financial integration in these financial markets, except for the Saudi Arabian market. Given these results, the hypothesis of diversification is not consistent for most of these regional markets.

3. METHODOLOGY

In this study, the first step in econometric analysis is to evaluate the time series stationarity. This analysis becomes essential since such characteristics are fundamental for the data generator process modelling (Lütkepohl and Krätzig 2004).

The Augmented Dickey-Fuller test (Dickey and Fuller 1981) postulates that the null hypothesis is non-stationary or integrated of order d (d > 0), I (1), against the alternative hypothesis of stationarity (Said and Dickey 1984) To validate the ADF test, we use the KPSS test (Kwiatkowski et al. 1992) where the hypotheses presented are contrary to the ADF test, i.e. H_0 postulates that the series is I (0) against the alternative that the series are I (1) (Noman and Rahman 2010).

Our analysis is based on daily annual returns from July 1, 2003 to June 25, 2012. We use data from the S&P index and the most important stock market indices in Latin America. These markets are Argentina, Brazil, Chile, Colombia, Mexico, and Peru.

We implement a Dynamic Linear Model (Campagnoli et al. 2009; Campagnoli, Petrone, and Petris 2009; Petris 2010) to check the convergence of the sensitivity of the Latin American stock markets with the US stock market. We specify the following Gaussian linear state space model:

$$R_{LA,t} = [1 \quad R_{US,t}] \begin{bmatrix} \beta_{1,t} \\ \beta_{2,t} \end{bmatrix} + \nu_t = F_t \beta_t + \nu_t \tag{1}$$

and

$$\begin{bmatrix} \beta_{1,t} \\ \beta_{2,t} \end{bmatrix} = \begin{bmatrix} \beta_{1,t-1} \\ \beta_{2,t-1} \end{bmatrix} + \begin{bmatrix} w_{1,t} \\ w_{2,t} \end{bmatrix} = \beta_{t-1} + w_t \tag{2}$$

Where $R_{LA,t}$ is the return of each of the six Latin American stock markets (Argentina, Brazil, Chile, Colombia, Mexico and Peru) and $R_{US,t}$ is the return of the US market (S&P 500).

Kalman filter: Given the dynamic linear model defined by equation (1) and (2) and the initial condition, let $\beta_{t-1}|R_{LA,1:t-1} \sim N_2(m_{t-1}, C_{t-1})$ the folowing statements hold:

The one step ahead predictive distribution of β_{t-1} given $R_{LA,1:t-1}$ is Gaussian, with parameters

$$a_t = E\left(\beta_t | R_{LA,1:t-1}\right) = m_{t-1} \tag{3}$$

and

$$\Omega_t = Var(\beta_t | R_{LA,1:T-1}) = C_{t-1} + W \quad (4)$$

The one step ahead predictive distribution of $R_{LA,t}$ given $R_{LA,1:t-1}$ is Gaussian, with parameters

$$f_t = E(R_{LA,t} | R_{LA,1:t-1}) = F_t a_t \quad (5)$$

and

$$Q_t = Var(R_{LA,t} | R_{LA,1:t-1}) = F_t \Omega_t F_t' + \sigma_v^2 \quad (6)$$

The filtering distribution of β_t given $R_{LA,:t}$ is Gaussian, with parameters

$$m_t = E(\beta_t | R_{LA,1:t}) = a_t + \Omega_t F_t' Q_t^{-1} e_t \quad (7)$$

and

$$C_t = Var(\beta_t | R_{LA,1:t}) = \Omega_t - \Omega_t F_t' Q_t^{-1} F_t \Omega_t \quad (8)$$

Where $e_t = R_{LA,:t} - f_t$ is the forecast error.

Kalman smoother: Given the dynamic linear model defined by equation (1) and (2), and the initial condition, if $\beta_{t+1} | R_{LA,1:T} \sim N_2(s_{t+1}; S_{t+1})$, then $\beta_t | R_{LA,1:T} \sim N_2(s_t; S_t)$, where

$$s_t = m_t + C_t \Omega_{t+1}^{-1} (s_{t+1} - a_{t+1}) \quad (9)$$

and

$$S_t = C_t - C_t \Omega_{t+1}^{-1} (\Omega_{t+1} - S_{t+1}) \Omega_{t+1}^{-1} C_t \quad (10)$$

Kalman forecast: Given the dynamic linear model defined by equation (1) and (2), and the initial condition, let $a_t(0) = m_t$ and $\Omega_t(0) = C_t$. Then, for $k \geq 1$, the following statements hold.

The distribution of β_{t+k} given $R_{LA,1:t}$ is Gaussian, with

$$a_t(k) = a_{t,k-1} \quad (11)$$

and

$$\Omega_t(k) = \Omega_{t,k-1} + W \quad (12)$$

The distribution of given Gaussian, with

$$f_t(k) = f_{t+k}\, a_t(k) \quad (13)$$

and

$$Q_t(k) = F_{t+k} \Omega_t(k) F_{t+k}' + \sigma_v^2 \quad (14)$$

4. RESULTS

The unit root tests ADP, PP and KPSS show that the time series are integrated of order (I), that is, they are stationary in first differences. In addition, we conducted cointegration tests that show non-significant results in the period from 2003 to 2012.

Figure 1 shows the evolution of the price indices, in first annual differences, of the seven markets under analysis. The price indices represented clearly reveal a period of great turbulence (2007-2009), and a second more tranquil period.

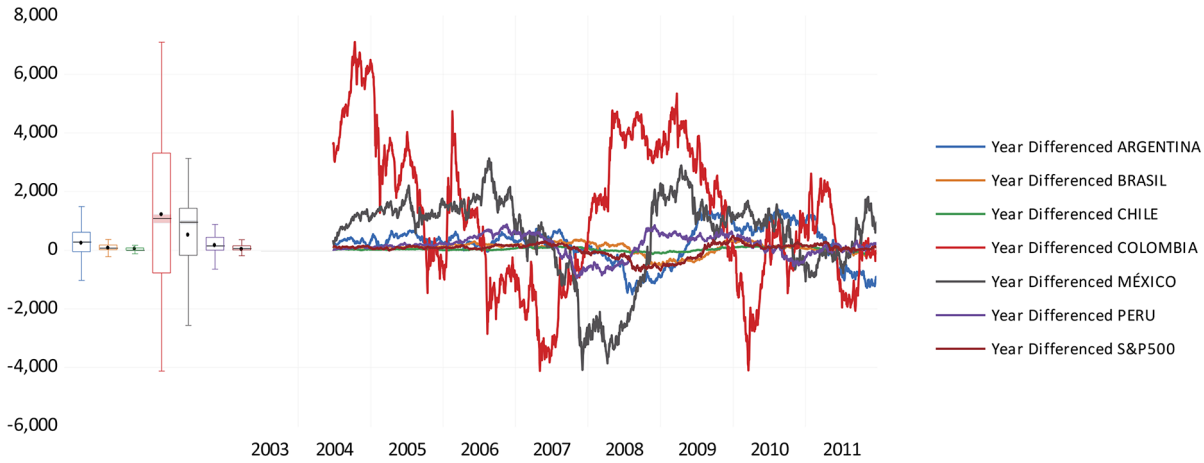

Figure 1. Evolution, in first differences, of the 7 stock market indices, in the period 15/07/2003 to 25/06/2012.

Source: Thomson Reuters.

Figure 2 shows the evolution of Latin American stock market yields, and the S&P 500 index. In all the yield series there is a relatively high dispersion around the average, as well as a relatively synchronised behaviour between the data series. The graphical analysis shows a high volatility, especially in the 2007-2009 period.

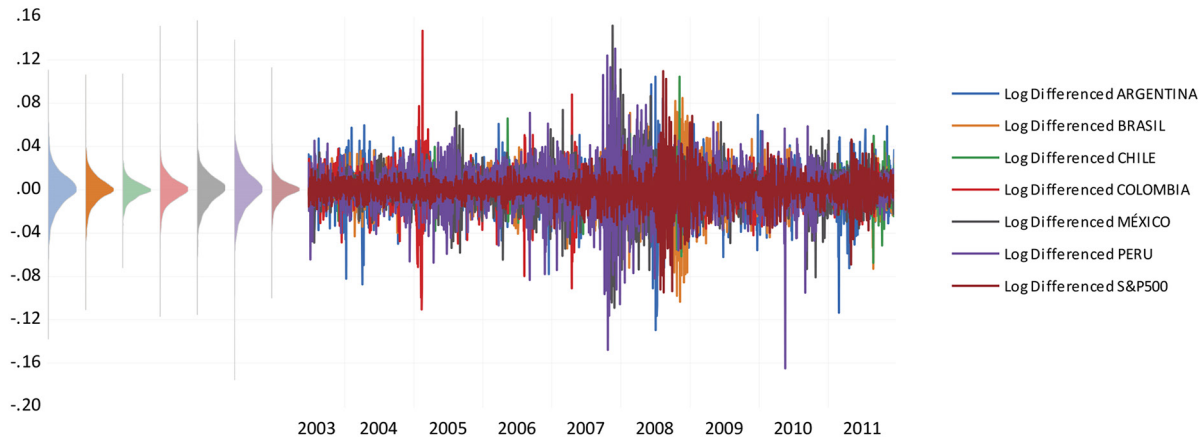

Figure 2. Evolution, in returns, of the 7 stock market indices, in the period 15/07/2003 to 25/06/2012.

Source: Thomson Reuters.

The correlation coefficients between Argentina, Brazil, Chile, Colombia, Mexico, Peru and the S&P index for the period 2003-2012 are significant, 0.76, 0.70, 0.81, 0.62, 0.88 and 0.69, respectively. However, when we compare the correlation coefficients before and after the 2008 financial crisis, we detect significant deviations.

Specifically, the correlation coefficient for each country in the period from 2008 to 2012 is higher than the coefficients in the period from 2003 to 2007. We carried out William's test (Steiger, 1980), and the results suggest that the correlations are not equal in both periods, except for Brazil. In addition, when considering separately the periods before and after the crisis, the results show that the period before the crisis presents a lower average level of correlation in the LAC Region markets, and the US market (0.47), with a very significant profitability (56.37%), and a lower volatility (35.03%). However, in the post-crisis period it has a higher correlation between the Latin American markets, and the S&P index (0.83), resulting in lower returns (13.74%) and greater volatility (43.23%).

After the crisis, the correlations between the region's stock exchanges are very significant when compared to the previous period. For example, the correlation coefficient between Colombia and Peru in the period prior to the 2008 crisis is (-0.64) rising to 0.87 in the post-crisis period. Argentina and Peru also show significant changes before the crisis (-0.17) and in the post-crisis period 0.91. Mexico and Argentina also show significant values before the crisis (-0.11), in the post-crisis period 0.91. One explanation for this phenomenon may have been the creation of the Latin American Integrated Market (MILA).

We carried out a descriptive analysis of the smoother Kalman filter associated with β_(2.t), in the period from January 2008 to June 2012 for each model and observed that the Brazilian market presents a higher sensitivity with the US market, with an average of 1.91, but also a higher volatility, with a standard deviation of 0.69. On the other hand, Chile presents a lower volatility, with a standard deviation of 0.22. In addition, the markets of Colombia, Peru (0.72) and Chile (0.79) show a lower sensitivity with the US index.

The results resulting from the standard deviation methodology of Kalman smoother for β_(2,t), in both periods (07:2003 - 12:2007 and 01:2008 - 06:2012), show significant decreases in volatility, namely between Latin American markets with the US index. The Peru market shows a standard deviation of 0.32 in the first period, and this volatility drops to 0.20 in the second period. Colombia had the most significant drop in volatility, with a standard deviation of 0.78 in the first period and 0.13 in the post-crisis period.

The results from the mean of Kalman smoother for β_ (2.t) methodology, in both periods (07:2003 - 12:2007 and 01:2008 - 06:2012), clearly show a significant convergence in the post-crisis period. For example, the country with the highest average β_(2, t), in the period 2003-2007 is Brazil, with 2.25, while Peru had the lowest average β_(2,t), with 0.56. In the second period, 2008-2012, β_ (2.T), of Brazil decreased 0.68 points, while Peru had an increase of 0.33. These changes mean that the average of β_ (2.t), Peru and Brazil in the second period is 0.89 and 1.57, respectively.

A possible explanation for these results is related to the existence of increased synchronization among international financial markets. Thus, the events that occur in some markets are transmitted to others in different regions of the world. Several studies have found evidence of movements and transmission of volatility between Latin American financial markets and the US market, namely the authors Melo and Rincón (2013), Weber (2013), Gamba-Santamaria et al. (2017).

5. CONCLUSION

The main conclusions show that the financial crisis in the US has caused synchronization among the financial markets of the LAC Region. Additionally, we found evidence of a very significant level of correlations between Latin American markets after the 2008 financial crisis. In addition, we found that the sensitivity of the Latin American markets to the US market presents consistent movements, which leads to a significant synchronization of the region with the US market. This type of synchronized reaction may accelerate the integration process between the financial markets of the LAC Region.

In conclusion, during the period of the 2009-2011 Eurozone sovereign debt crisis, these regional markets showed a positive trend in the Latin American and US markets, i.e. there were no significant moves from the European markets to the Latin American regional markets. In addition, the results of the dynamic models showed significant convergence, i.e. these markets tend towards integration, in the post sub-prime period, which may hamper portfolio diversification in these regional markets.

Regarding suggestions for future studies, we suggest a better understanding of the factors driving increasing convergence and correlation between the financial markets of the LAC region and the US market.

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ANALYSIS OF TAX RELIEF FOR INDIVIDUALS IN THE EUROPEAN UNION COUNTRIES

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Abstract: *The article deals with the field of personal income tax, namely with tax relief related to personal income tax. Each country provides different reliefs and the article deals mainly with two approaches to reliefs – tax relief for taxpayer and child tax relief for working families with children. An integral part of the article is an analysis of all European Union countries in terms of these reliefs. However, it is not possible to compare the tax reliefs only based on their value, it is necessary to define important differences in terms of currency and average wages of countries and finally compare the results among themselves. The result of the article is a statistical processing of results, which determines the ranking of countries in terms of average wage and relative savings for an individual.*

Keywords: *Income tax, Tax payer, Tax relief.*

1. INTRODUCTION

In today's global and dynamically developing world, tax policy systems are subject to constant change. In order to be able to reflect the current state of society and its various requirements, it is necessary to constantly transform and adapt. States are seeking a consensus between the level of taxation and the feasibility of tax levies for taxpayers so that they do not adversely affect their economic activity. They are looking for instruments that will not undermine the country's economic stability while ensuring the sustainability of society. The adoption of tax strategies is influenced by the political, historical and cultural context.

One of the fiscal instruments to support desirable public policies is tax relief. There are many different views to consider tax reliefs. They can be seen as an inexpensive administrative tool to support the desired public policies, or as measures that complicate the tax system and cause distortions. Their purpose is, under certain conditions, to give taxpayers an advantage in the form of lower tax levies and thereby to influence the taxpayer's behaviour in the desired direction. Tax reliefs then represent a reduction in government revenue through preferential tax treatment for specific groups of taxpayers or for specific activities. Thus, taxes in society not only fulfil a fiscal economic function, but also take into account a number of social objectives, while the extent of tax reliefs depend on the government policy objectives. The use of tax reliefs by governments is omnipresent and growing and their introduction is motivated by various economic or social objectives.

The economic importance of tax reliefs is also reflected in the EU Directive (2011/85/EU, 2011), which in its Article 14.2 obliges EU Member States to publish detailed information on the impact of tax reliefs on public revenues.

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However, documenting and examining the impact of tax reliefs on budget revenues is complicated because there is neither uniform international definition as such nor a uniform reporting concept, which results in complications when comparing tax reliefs internationally.

The OECD, in its publication "Tax Expenditures in OECD Countries" (OECD, 2010), states: "Tax expenditures are provisions of tax laws, regulation or practices that reduce or postpone revenue for a comparatively narrow population of taxpayers relative to a benchmark tax (Anderson, 2008). For the government, a tax expenditure is a loss of revenue; for the taxpayer it is a reduction in the tax liability. Tax expenditures are better known in many countries as tax reliefs, tax subsidies and tax aids (Schick, 2007).

According to Kraan (2004), the benchmark tax includes: the rate structure, accounting conventions, the deductibility of compulsory payments, provisions to facilitate administration, and provisions relating to international fiscal obligations, and tax expenditure are defined as a transfer of public resources that is achieved by reducing tax obligations with respect to a benchmark tax, rather than by direct expenditures.

Tax reliefs can also be defined as all those items in the existing tax forms that mean a loss of central government budget revenue because they reduce either the tax base or the tax due. This means that part of the income does not at all come into the assessment process in the form of a tax. Excepting the given items from the tax base will result in the loss of the government treasury revenue and such an item constitutes tax expenditure (Bratic, 2006).

In the absence of a generally accepted definition of a tax relief, most countries have their definition incorporated in their legal systems.

Austria defines tax reliefs as revenue foregone via preferential tax treatment benefitting private or corporate persons carrying out activities regulated by common law, which are perceived by the government as being in the public interest (CEP, 2018).

In the Netherlands, they are defined as government expenditure that comes in the form of a loss or deferment of tax receipts, resulting from a provision in the law to the extent that this provision is not in accordance with the primary structure of the tax law (OECD, 2010; CEP, 2018).

Despite criticism, different forms of tax reliefs are still being used today. On the contrary, their use has an increasing tendency. James and Nobes (2017) justify this mainly by political aspects, as tax reliefs are politically easier to enforce compared to direct government spending. Moreover, at the time of their introduction, they do not require any monetary expenditure and thus give politicians the opportunity to take various initiatives without being scrutinized by processes that are applied to budget expenditure and reveal their real costs.

The analysis should take into account that tax reliefs (expenditures) are in fact not real expenditures, they are notionally spent; they are based on assumptions and estimates of how taxpayers would behave under certain conditions. There are three possible approaches to quantification of tax reliefs (OECD, 1996; Polack's Brixi, 2004; Fookes, 2009; OECD, 2010; Kubátová and Jareš, 2011; Bratic, 2012; Burton and Sadiq, 2013):

2. DATA AND METHODOLOGY

Taxation systems are diverse. Diversity does not only lie in the number of tax brackets and rates or taking into account the social aspects of the taxpayer when calculating the tax liability. Social aspects are taken into account in some countries in the form of reliefs from the tax base - tax-free allowances or, as in the Czech Republic, directly by a tax discount - credit.

As every country is specific, it is necessary to analyse the form in which tax reliefs are provided as well as the size. To be able to compare the countries mutually, only tax reliefs mentioned above are considered. To compare total tax savings, conversion to a universal currency - EURO is used. The exchange rate according to the server www.kurzy.cz was used as of December 29th, 2018.

Those countries that do not provide any tax reliefs for taxpayers or their children were not included into the comparison. Tax savings are results of either provided tax-free allowances (a taxpayer can earn a certain amount of money before paying tax) or tax credits (a taxpayer can reduce his overall tax liability). For that purpose, two formulas were stated.

Some European countries, such as the Czech Republic, Finland, Italy, Poland and Greece, provide tax reliefs in the form of tax credits. The formula to calculate the total saving per year is the following:

Tax Saving = Tax Credit / Average Annual Gross Income

Some European countries, such as Belgium, Estonia, Croatia, Latvia, Lithuania, Luxembourg, Germany, Slovakia, Slovenia and Spain, provide tax reliefs in the form of tax-free allowances. The formula to calculate the total saving per year is the following:

Tax Saving = (Tax-free allowance – Tax-free allowance * Tax Rate)
/ Average Annual Gross Income

The countries that were not considered are Bulgaria, Denmark, France, Croatia, Ireland, Cypress, Hungary, Malta, Netherland, Portugal, Romania, Sweden and Great Britain. Those countries do not provide tax reliefs for the taxpayer and children or the form provided is not applicable for the comparison.

Table 1. Tax Reliefs for a taxpayer and children in the EU countries

	Average Gross Income Euro/ Month	Average Tax Rate	Tax relief for a Taxpayer	Tax relief for kids
Belgium	3 401	43.55%	Tax-free Personal Allowance	Tax-free Children Allowance
Bulgaria	586	22.01%	-	-
Czech Rep.	1 149	24.02%	Tax Credit	Tax Credit
Denmark	5 191	37.01%	Tax-free Personal Allowance	-
Estonia	1 221	21.62%	Tax-free Personal Allowance	Tax-free Children Allowance
Finland	3 380	25.77%	Tax Credit	-
France	2 957	24.75%	-	Tax-free Children Allowance

Croatia	1 081	25.81%	Tax-free Personal Allowance	Tax-free Children Allowance
Ireland	3 133	20.87%	Tax Credit	-
Italy	2 534	30.62%	Tax Credit	Tax Credit
Cyprus	1 779	6.80%	-	-
Lithuania	885	21.69%	Tax-free Personal Allowance	Tax Credit
Latvia	1 013	27.15%	Tax-free Personal Allowance	Tax-free Children Allowance
Luxembourg	4 412	28.40%	Tax-free Personal Allowance	Tax Credit
Hungary	955	33.51%	-	Tax-free Children Allowance
Malta	1 379	25.96%	-	-
Germany	3 703	38.70%	Tax-free Personal Allowance	Tax-free Children Allowance
Netherland	2 855	24.25%	-	-
Poland	1 102	28.86%	Tax Credit	Tax Credit
Portugal	1 158	20.12%	-	Tax Credit
Austria	3 703	36.01%	Tax Credit	Tax Credit
Romania	787	28.21%	Tax-free Personal Allowance	
Greece	1 092	16.03%	Tax Credit	Tax Credit
Slovakia	980	23.67%	Tax-free Personal Allowance	Tax Credit
Slovenia	1 626	34.69%	Tax-free Personal Allowance	Tax-free Children Allowance
Spain	2 189	20.10%	Tax-free Personal Allowance	Tax-free Children Allowance
Sweden	3 340	23.05%	Tax-free personal Allowance	-
Great Britain	2 498	20.34%	Tax-free Personal Allowance	-

Source: https://www.reinisfischer.com/average-salary-european-union-2018

2.1. Hypotheses

This research has focused on the interdependence of the data. On the basis of the data obtained, following hypotheses were stated:

Hypothesis H_1 - The higher the income, the higher the tax relief for children.
Hypothesis H_2 - The higher the income, the higher the tax relief for a taxpayer.

2.2. Research methods

The basic research methods used were induction, analysis and subsequent synthesis methods. Though the research was conducted in 2019, basic statistical information was only available for the year of 2018 and previous. Basic hypotheses were set and dependencies were tested on SPSS.

Following statistical method, a regression analysis that allows us to identify and mathematically describe statistical dependencies, verify deductive theories, and help test the strength and direction of the quantified relationship, was used. Nonparametric statistical method - Spearman correlation analysis was also used.

3. RESULTS AND DISCUSSION

To prove the hypotheses stated above, the survey was divided into two models. The first model considers relief for one child and the second model relief for three children.

The first mentioned shows tax reliefs for the taxpayer, a tax resident of a country, and his one child sharing a household with him. There are no other tax reliefs incorporated, even though the taxpayer would under normal circumstances qualified for them. If the tax base relief is provided, the amount of income is considered in term of tax rate.

Table 2. Total Tax Saving for a taxpayer with one child

No.		Average Gross Income Euro/ Month	Tax Relief for a taxpayer Euro/ Year	Tax Relief for one child Euro/Year	Total Tax Saving
1.	Croatia	1 081	6 142	2 829	44.26%
2.	Slovakia	980	3 803	282	26.51%
3.	Spain	2 189	5 550	2 400	23.99%
4.	Slovenia	1 626	3 303	2 437	19.21%
5.	Latvia	1 013	912	2 100	18.02%
6.	Germany	3 703	8 820	3 678	16.80%
7.	Finland	3 380	5 279	1 139	15.82%
8.	Greece	1 092	1 900	50	14.88%
9.	Belgium	3 401	7 070	1 500	11.85%
10.	Austria	3 703	1 584	3 600	11.66%
11.	Czech Rep.	1 149	973	525	10.86%
12.	Lithuania	885	2 742	600	9.62%
13.	Estonia	1 221	1 728	0	9.34%
14.	Italy	2 534	875	641	3.40%
15.	Poland	1 102	133	266	3.02%
16.	Luxembourg	4 412	480	923	1.61%

Source: own research

The second model shows tax reliefs for the taxpayer, a tax resident of a country, and his three children living in the same household. As previously stated, there are no other tax reliefs incorporated, even though the taxpayer would under normal circumstances qualified for them. If the tax base relief is provided, the amount of income is considered in term of tax rate.

Table 3. Total Tax Saving for a taxpayer with three children

No.		Average Gross Income Euro/ Month	Tax Relief for a taxpayer Euro/ Year	Tax Relief for three children Euro/Year	Total Tax Saving
1.	Croatia	1 081	6 142	12 773	50.42%
2.	Spain	2 189	5 550	9 100	44.56%
3.	Latvia	1 013	912	6 300	43.22%
4.	Estonia	1 221	1 728	5 184	36.98%
5.	Lithuania	885	2 742	1 800	33.29%
6.	Slovakia	980	3 803	846	30.18%
7.	Austria	2 646	1 584	10 800	27.87%
8.	Germany	3 703	8 820	11 034	27.39%
9.	Slovenia	1 626	3 303	4 419	25.85%
10.	Finland	3 380	5 279	4 002	22.88%
11.	Belgium	3 401	7 070	8 670	21.77%
12.	Czech Rep.	1 149	973	1 997	21.54%

13.	Greece	1 092	1 900	200	16.02%
14.	Poland	1 102	133	1 011	8.65%
15.	Italy	2 534	875	715	5.23%
16.	Luxembourg	4 412	480	2 769	4.39%

Source: own research

3.1. Statistical data processing:

Subsequently, data normality tests were carried out to show that, apart from income, the data did not show normal distribution. Therefore, methods of non-parametric statistics will be used, more precisely the Spearman correlation analysis.

The Spearman correlation matrix:

Table 4. The Spearman correlation matrix

	Income	**Relief**	**Child 1**	**Child 3**
Income	1	0.068	0.434	0.541
Relief	0.068	1	0.471	0.45
Child 1	0.434	0.471	1	0.761
Child 3	0.542	0.45	0.761	1

Source: own research

It is clear from the correlation matrix that income is connected with tax relief for taxpayer rho = 0.068, followed by relief for child with rho = 0.434 and finally relief for three children rho = 0.541. These coefficients were found to be statistically significant.

For income and taxpayer relief is S = 633.97, p-value = 0.8033. Since the p-value is > 0.05, the correlation coefficient may equal zero. Thus, it will be assumed that income and taxpayer relief are not related.

For the dependence of income and relief for one child, the result is S = 384.78, p-value = 0.0929. Since the p-value is > 0.05, the correlation coefficient may equal zero and there is no correlation between income level and relief for one child. Thus, income and relief for one child are not related.

For the dependence of income and relief for 3 children, the result is S = 256.73, p-value = 0.037. Since p-value <0.05, the correlation coefficient does not equal zero. Since the value of the coefficient rho = 0.541, which indicates a moderate positive correlation, it will be further assumed, that the income and relief for 3 children are related. Thus, relief for 3 children increases with increasing income.

4. CONCLUSION

The article focused on the two most important income tax savings, which are considered to be relief for a taxpayer and for children. However, it has been found that countries use different ways to provide savings, and there are even countries that do not give such support at all. Therefore, each country was analysed with that regard and countries not providing these savings were excluded from the overall comparison.

All savings had to be first converted to the EURO, using the exchange rate at the end of the year 2018. Thereafter, the savings determined as tax base reliefs were first multiplied by the tax

rate and the saving as the percentage of the average income was determined. The calculation of savings provided in the form of tax credit, i.e. directly as a deduction from tax liability, were easier to perform, when only a percentage of the average income was set.

For the subsequent assessment two models were established, namely taxpayer with one child, respectively three children.

After statistical processing in terms of solely average income, Luxembourg was the best and Croatia the worst performer. However, after comparing the two models, Croatia turned out the best. Luxembourg, that was initially favoured due to the high average income, moved down to the bottom of the table.

Tax savings for taxpayer remain the same in both models, but the savings for children change, which means that the countries strive to support taxpayers with children, i.e. the more children the taxpayer has, the higher the savings.

We assumed the validity of the hypotheses H_1 and H_2, but the correlation analysis shows that the hypothesis H_1 can neither be confirmed nor refuted. For the model with one child we would refute the hypothesis H_1, but for the model with three children we would confirm the hypothesis. On the basis of statistical results, we can also refute the hypothesis H_2, as the tax relief does not depend on the taxpayer's income.

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THE ROLE OF THE VISEGRAD GROUP'S MACROECONOMIC DEVELOPMENT IN EXCHANGE RATE DETERMINATION

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Abstract: *Shifts in the values of macroeconomic indicators influencing the exchange rate of a particular currency may signal future monetary policy decisions. Several problems or opportunities can be exposed in terms of international trade, investment and other activities involving the conversion of a country's currency by monitoring the macroeconomic development. This paper aims to analyze a wide range of macroeconomic indicators with a potential effect on exchange rate movements in the Visegrad Group between 2000 and 2017. It provides an overview of economic indicators with a significant impact on the volatility of four currencies, the Czech crown, Hungarian forint, Polish zloty and the euro against US Dollar. The presented exchange rate models incorporate the USD/EUR since the Slovak Republic is part of the Eurozone. The paper analyzes the contribution of the Slovak Republic to the development of the euro as well as the importance of various endogenous and exogenous macroeconomic indicators in the Visegrad Group's exchange rate determination. The paper tests besides the traditional influence factors the relevance of economic complexity and corruption, which do not serve as a focal point in empirical exchange rate theories. The findings indicate that the end year spot exchange rates of the Czech crown, Hungarian forint and the euro, are merely influenced by the GDP per capita measured in current prices. For this reason, they have a significant role in predicting exchange rate movements across the Visegrad Group. Additionally, the last chapter compares the results of the employed methods. Overall, regarding the values of explained variance and the root mean square of error, the paper points out that the models established for the Czech crown and the euro are the most accurate.*

Keywords: *Indicator, GDP, Regression, Outliers, Complexity.*

1. INTRODUCTION

The research aimed to identify significant influence factors with respect to the future development of the Visegrad Group's US Dollar exchange rates.

Exchange rate fluctuations determine the volume and direction of exports and imports. The development of exchange rates is linked to their possible steep changes, which represent a substantial risk for investors and affects the particular county's competitiveness (Ramasamy & Abar, 2015, p. 261-281, Jeon et al., 2017, p. 112-159). Exchange rates develop depending on the country's economy, as macroeconomic variables are unstable over time (Salvatore, 2012, p. 486-487, Cihelková, 2008, p. 150-155). The monetary exchange rate models of Frenkel-Bilson and Dornbusch-Frankel (Frenkel, 1978, p. 3-4) consider relative money supply, relative real income, interest rate and inflation differentials to be the most important macroeconomic indicators in exchange rate determination.

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Other factors also play an important role in the development of exchange rates. Chen and Rogoff (Y. Chen & Rogoff, 2003,p. 134) pointed out the relationship between commodity prices considering their sample. Furthermore, Ferraro, Rogoff and Rossi (Ferraro et al., 2015, 116-141) proved that incorporating oil prices in exchange rate models can increase their predictive ability, therefore they assume that the relationship between changes in oil prices and exchange rates is significant. According to Shiu-Sheng Chen and Cheng-Che Hsu (Chen & Hsu, 2019, p. 700), the situation on the stock market is critical for the determination of future exchange rate movements. Overall, the determinants of exchange rates can be fundamental or temporary (Bostan et al., 2018, p. 2).

In this paper, we decided to analyse the influence of the selected macroeconomic factors on exchange rates. The next chapter presents our proposed model established from the data. In the following chapters, we present our results. Our conclusions can be found in the last chapter. We see the contribution of this paper in revealing key macroeconomic factors affecting the evolution of exchange rates in the Visegrad Countries.

2. METHODOLOGY AND DATA

This paper analyses the economic development of the Visegrad Group through the changes in selected macroeconomic indicators. We employed two methods for regression analyses, namely the multivariate OLS and the robust regression methods that used the Hubert weighting method. The established models incorporate the yearly values of economic variables from 2000 to 2017. In the case of Slovakia, the analyses represent this country's contribution to the common currency euro. We transformed the nominal GDP and considered its logarithmic form in each analysis.

The research tested the following exchange rate model:

$$FX_{EY} = \beta_0+\beta_1\times CPI+\beta_2\times LTINT+\beta_3\times SHPRICE+\beta_4\times EMP+\beta_5\times HOUSECOST_{RENT}+ \beta_6\times \log GDPpc_{current}+\beta_7\times eci+\beta_8\times Corruption\_Score+e \quad (1)$$

where

FX_{EY} represents the end year spot exchange rates of the Czech crown, Hungarian forint, Polish zloty and the euro against US Dollars,

CPI represents the consumer price index, measuring inflation through the changes in the consumer price index,

$LTINT$ represents the long-term interest rates of government bonds with a 10-year maturity,

$SHPRICE$ represents the share price index, which measures the changes in the values of common stock traded nationally as well as internationally,

EMP represents the employment rate of the population in a particular country,

$HOUSECOST\_RENT$ represents an index, which measures the changes in the rent costs of houses,

$LogGDPpc\_current$ represents the nominal GDP per capita measured in USD,

eci represents the economic complexity index, measuring the knowledge base of an economy by considering the intensity of knowledge in production processes and products that a particular country export,

$Corruption\_Score$ measures the degree of corruption in a country on the interval from 0 to 100, where the countries with low scores are those with more corrupt practices.

The sources of the above listed indicators follow from the databases of the Bank of International Settlements, Bank of England, Transparency International, Organisation for Economic Co-operation and Development and the Observatory for Economic Complexity. Each indicator, in an index form, considers the year 2015 as the base year. The selection of these factors was based on our preliminary cluster analysis to avoid the problem of multicollinearity.

The presented analyses in this paper verify the relationship between macroeconomic variables and exchange rates. Moreover, we decided to analyse economic complexity and corruption as contemporary economic conditions are determined by a certain level of knowledge and misuse of public power for private benefit. These indicators do not create a focal point to a great extent in researches. In this context, the Czech Republic proved to be the most complex owing to its production processes and during the analysed period the least complex products had been produced in Poland. According to the mean values of corruption scores, the most corrupt country was the Slovak Republic, followed by the Czech Republic.

3. SIGNIFICANT ECONOMIC INDICATORS IN EXCHANGE RATE DETERMINATION

In this part, we investigated how the selected macroeconomic indicators influence the development of the Czech crown, Hungarian forint, Polish zloty, and the euro. We established regression models to point out the differences and the co-movements in terms of the selected indicators. Table 1 lists the results of the ordinary least square regression for each country.

After comparing the models, for the four countries of the Visegrad Group, we found that in terms of the coefficient of determination, they are the most accurate for the Czech crown and the euro. 93.11% and 95.47% of the variance in the dependent variable was predictable by independent variables in our proposed model for the exchange rates USD/CZK and USD/EUR. The model for the euro is the best since the Adjusted R-square for this currency is the highest, 0.9145. On the contrary, for the Hungarian forint and the euro, the values of the R-square statistic were lower, 81.88% and 83.97% respectively (see Table 3).

The exchange rates of the Czech crown, Hungarian forint and the euro are influenced by one common macroeconomic indicator, which is the nominal GDP per capita. The coefficients of this independent variable acquire negative values in each of the models. A one per cent increase in the logarithms of the nominal GDP per capita in a particular country results in a decrease in the values of exchange rates of the Visegrad Group excluding the Polish zloty. Additionally, the results indicate that there exists a statistically significant relationship between the USD/EUR exchange rate and the Slovak Republic's economic complexity. Following an increase of the Slovak Republic's economic complexity, which is linked to the diversity of products that the country exports along with their ubiquity, the USD/EUR exchange rate increases depreciating the euro against the US Dollar. Therefore, if the Slovak Republic became more diversified and produced fewer products with great ubiquity, then the euro would weaken against the dollar.

For Poland, it is not possible to establish a representative model for its exchange rate against US Dollars as none of the macroeconomic variables has a significant impact on the USD/PLN exchange rate, regarding the composition of the model.

Table 1. Parameter estimates of the OLS regression

	Variable	Estimate	Standard Error	t Value	Pr > |t|
CZK	Intercept	184.3242	52.4466	3.5100	0.0066
	CPI	0.5848	0.4707	1.2400	0.2454
	LTINT	-0.3199	0.8609	-0.3700	0.7188
	SHPRICE	0.0117	0.0417	0.2800	0.7850
	EMP	0.1686	0.5198	0.3200	0.7531
	HOUSECOST_RENT	0.1264	0.1038	1.2200	0.2542
	logGDPpc_current	-18.8088	5.4053	-3.4800	0.0069
	ECI	-2.6080	13.7387	-0.1900	0.8537
	Corruption_Score	0.0397	0.2758	0.1400	0.8887
HUF	Intercept	1,270.6284	554.0709	2.2900	0.0475
	CPI	-2.6031	5.3167	-0.4900	0.6361
	LTINT	1.7784	12.3817	0.1400	0.8890
	SHPRICE	0.1521	0.4365	0.3500	0.7355
	EMP	5.9992	6.2977	0.9500	0.3657
	HOUSECOST_RENT	0.6583	1.5418	0.4300	0.6794
	logGDPpc_current	-178.4597	52.3020	-3.4100	0.0077
	eci	153.3120	151.3145	1.0100	0.3374
	Corruption_Score	0.1545	2.0879	0.0700	0.9426
PLN	Intercept	7.5713	5.9065	1.2800	0.2319
	CPI	-0.0867	0.0528	-1.6400	0.1351
	LTINT	-0.0813	0.0666	-1.2200	0.2534
	SHPRICE	-0.0088	0.0065	-1.3500	0.2087
	EMP	0.0529	0.0731	0.7200	0.4878
	HOUSECOST_RENT	-0.0394	0.0323	-1.2200	0.2531
	logGDPpc_current	-0.7320	0.7692	-0.9500	0.3661
	eci	1.3780	1.1742	1.1700	0.2707
	Corruption_Score	0.0567	0.0310	1.8300	0.1004
EUR	Intercept	3.3895	1.3520	2.5100	0.0335
	CPI	-0.0052	0.0108	-0.4800	0.6406
	LTINT	-0.0218	0.0185	-1.1800	0.2682
	SHPRICE	-0.0013	0.0007	-1.8200	0.1013
	EMP	0.0028	0.0178	0.1600	0.8794
	HOUSECOST_RENT	-0.0061	0.0056	-1.0800	0.3084
	logGDPpc_current	-0.4521	0.1974	-2.2900	0.0478
	eci	1.2230	0.5190	2.3600	0.0428
	Corruption_Score	0.0185	0.0126	1.4700	0.1768

Source: Analysis on the data

4. COMPARING THE RESULTS OF THE OLS AND ROBUST REGRESSION

To point out and eliminate outliers and influential observations we compared the results of the ordinary least square regression with the robust regression (Table 3). After employing the robust regression method (Table 2), we found the substantial economic indicator in exchange rate determination of the Czech crown and the Hungarian forint, which is the nominal GDP, likewise as in the OLS regression. On the contrary, for Poland and the Slovak Republic, the robust analysis yielded different results. The Polish zloty and the euro are commonly influenced by the development of:

- House costs – Higher rent prices in Poland and the Slovak Republic are reflected in their currency's appreciation against US Dollars. The zloty's and the euro's strengthening can be present due to increased investments of foreign subjects in Polish and Slovakian real estate. The USD/PLN and the USD/EUR exchange rates appreciate after investors convert their dollars into the national currencies of these two countries, zloty and euro.
- The nominal GDP – The Polish zloty and the euro strengthen their position against the US Dollar when the nominal GDP of Poland and Slovakia increases by one percentage. Thus, economic growth has a positive impact on the zloty and the euro in the case if a country aims to achieve its currency's appreciation against the US Dollar, to make imports cheaper for domestic consumers.

Additionally, in the USD/PLN exchange rate determination the following macroeconomic indicators play a key role:

- Inflation – We received discussable results regarding inflation, as higher levels of consumer price index appreciated the zloty, during the analysed period, on average by 0.10.
- Share prices – An increase in this indicator causes a decrease in the value of USD/PLN, appreciating the Polish currency. The better situation on the shares market represented by higher prices has an incentive for investors holding US Dollars to buy Polish shares until they reach their peak and then the prices along with the returns begin to fall.
- Rate of employment – an increase in the rate of employment in Poland by one percentage depreciates the zloty on average by 0.16. The reason behind this can be that a higher rate of employment is linked to a greater disposable income of domestic consumers enabling them to invest internationally, namely in USD, which then weakens the country's currency.

The USD/EUR exchange rate merely deviates, besides the rent prices and nominal GDP owing to the changes also in:

- Long term interest rates – Increasing interest rates of government bonds in the Slovak Republic appreciate the USD/EUR exchange rate. Favourable opportunities to achieve better returns on investment into the country's debt might create an incentive among investors holding US Dollars to convert them to euros and enjoy higher yields when disposing of bonds. On the other hand, the US dollar weakens its position against the euro.
- Economic complexity – The findings indicate that rising economic complexity of the Slovak Republic leads to the depreciation of the euro against USD. One of the reasons could be the growing prices of more complex goods weakening the motivation of consumers to purchase them. Therefore, decreased demand for Slovakian products leads to the consumers', especially those holding euros, new orientation on the US market. Eventually, the euro supply increases after the exchange.

5. CONCLUSION

This research aimed to find several macroeconomic indicators that have a significant influence on the development of exchange rates in the period from 2000 to 2017. We employed two methods for data analysis, the OLS and the robust regression. The former method yielded similar results for three countries, the Czech Republic, Hungary and the Slovak Republic. Only one of the eight macroeconomic indicators influence significantly the end year spot exchange rates of these countries, which is the nominal GDP per capita.

Table 2. Parameter estimates of the robust regression

	Variable	Estimate	Standard Error	Chi-Square	Pr > ChiSq
CZK	Intercept	184.3206	57.1551	10.4000	0.0013
	CPI	0.5849	0.5129	1.3000	0.2542
	LTINT	-0.3201	0.9382	0.1200	0.7330
	SHPRICE	0.0117	0.0455	0.0700	0.7967
	EMP	0.1685	0.5665	0.0900	0.7661
	HOUSECOST_RENT	0.1264	0.1131	1.2500	0.2638
	logGDPpc_current	-18.8069	5.8905	10.1900	0.0014
	eci	-2.6112	14.9722	0.0300	0.8616
	Corruption_Score	0.0397	0.3006	0.0200	0.8949
HUF	Intercept	1,270.6280	554.0709	5.2600	0.0218
	CPI	-2.6031	5.3167	0.2400	0.6244
	LTINT	1.7784	12.3817	0.0200	0.8858
	SHPRICE	0.1521	0.4365	0.1200	0.7275
	EMP	5.9992	6.2977	0.9100	0.3408
	HOUSECOST_RENT	0.6583	1.5418	0.1800	0.6694
	logGDPpc_current	-178.4600	52.3020	11.6400	0.0006
	eci	153.3120	151.3145	1.0300	0.3110
	Corruption_Score	0.1545	2.0879	0.0100	0.9410
PLN	Intercept	4.0084	2.7966	2.0500	0.1518
	CPI	-0.1062	0.0250	18.0500	<.0001
	LTINT	-0.0502	0.0315	2.5300	0.1116
	SHPRICE	-0.0155	0.0031	25.1700	<.0001
	EMP	0.1661	0.0346	23.0100	<.0001
	HOUSECOST_RENT	-0.0345	0.0153	5.1000	0.0239
	logGDPpc_current	-0.7205	0.3642	3.9100	0.0479
	eci	-0.0665	0.5559	0.0100	0.9047
	Corruption_Score	0.0211	0.0147	2.0600	0.1510
EUR	Intercept	3.2723	0.9244	12.5300	0.0004
	CPI	-0.0072	0.0074	0.9500	0.3299
	LTINT	-0.0474	0.0126	14.0200	0.0002
	SHPRICE	-0.0007	0.0005	1.9600	0.1612
	EMP	-0.0089	0.0122	0.5300	0.4653
	HOUSECOST_RENT	-0.0094	0.0038	6.0000	0.0143
	logGDPpc_current	-0.2695	0.1350	3.9900	0.0459
	eci	1.0409	0.3549	8.6000	0.0034
	Corruption_Score	0.0109	0.0086	1.5900	0.2069

Source: Analysis on the data

Table 3. Summary of the OLS and robust regression

	CZK	HUF	PLN	EUR
OLS R-Square	0.9311	0.8188	0.8397	0.9547
OLS Adj R-Sq	0.8698	0.6577	0.6971	0.9145
Robust Regression R-Square	0.8583	0.7954	0.7604	0.8634

Source: Analysis on the data

The results of the robust regression showed the differences between countries as well as verified the accuracy of the OLS analysis by weighting each observation. For the Czech Republic, the Huber weighting method proved that the results of the OLS method are close to that of the robust regression. Additionally, employing the OLS and the robust regression, we received the same results for Hungary as well. Therefore, we can state that according to our data the nominal GDP is the most important indicator in predicting exchange rates for these two countries. The models for the Slovak Republic and Poland are the least accurate since there are three to four observations with noticeably reduced weights form those of the OLS method, which assigns a weight one to each observation.

Furthermore, one additional indicator, namely the rent prices, represents a common factor for Poland and the Slovak Republic. The robust regression revealed three other indicators affecting the zloty and two for the euro. The indicator with the greatest impact on the euro, based on the values of the regression coefficients, is not the nominal GDP as in the case of the other three countries, but the economic complexity index in the Slovak Republic. Its one-unit increase depreciates the euro on average by 1.04.

In terms of the variance explained and predictive ability, the best models were built for the Czech crown and the euro. The presented analyses can serve as a base point for investment decisions in the Czech crown, Hungarian forint, Polish zloty and the euro. They can also represent a signal for organizations, to hedge their open positions and avoid losses due to steep changes in macroeconomic variables influencing the US Dollar exchange rate of their national currency.

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RESEARCH OF CONSISTENCY AS A STABILITY FACTOR OF COMPANIES IN THE REPUBLIC OF SERBIA

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Abstract: *Every organization has got certain forms of behaviours, rules, norms, beliefs and attitudes they apply in their business activities and which become common and recognizable patterns of behaviour of all members in one organization and make its factor of consistency. According to the Denison Model, which the research presented in this paper leans on, mission and the consistency factor represent the stability factor of the organizational culture, a phenomenon of the essential importance for successful business. The aim of this paper is to present the presence of consistency in organizations in the Republic of Serbia through an empirical research and to analyse consistency differences in domestic and foreign companies. Organizational culture is developed on the foundations of national culture, hence noticing these differences is important in order to use the results to enhance organizational culture of domestic companies which, in times of transition, are often faced with survival challenges.*

Keywords: *Consistency, Stability, Organization, Organizational culture, Denison Model, Serbia.*

1. INTRODUCTION

The phenomenon of stability is closely related to the ultimate success of a business organization. According to Denison's model for examining the organizational culture, on which the research of this paper leans, the stability of organizations is achieved by a well-defined mission shared by all members of the community, as well as by precisely defined values and a business system (consistency). A high degree of unity through developing and negotiating a sense of commitment to the enterprise as a long-term goal and a clear definition of certain values and a business system allows companies to manage their reliability, survive in times of crisis and low profits and successfully fight on the market. In this regard, according to Blanchard & O´Connor (2003) „perhaps more than ever before, a modern organization must know why it exists and what principles it will work on" (p. 2). According to Denison's model, consistency is determined by three factors: coordination and integration, agreement, and core values, whose presence we will demonstrate by examining the defined attitudes presented in the research section of the paper. Given the fact that values and business systems are based on managerial principles and that they differentiate based on the cultural background they come from, we will point out the difference between domestic and foreign companies operating on the territory of the Republic of Serbia.

2. CONSISTENCY AS A STABILITY FACTOR

According to Lamberg, Tikkanen, Nokelainen and Suur-Inkeroin (2005), "Although the flexibility and speed of work have been considered as the sources of competitive advantage in a

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dynamic environment, research development strategies see consistency (instead of aggression or full speed) as the necessary condition for the survival of a company (e.g. Barnett & Hansen, 1996; Sheth & Sisodia, 2002)“ (p. 2). By using the established job practices in organizations and sharing crucial values, an organization is developing efficient processes and routines that will, in the long run, play an important supportive role when it comes to its goals and strategies.

The organization should work to consolidate those values that make it successful. Any shortcomings or negative values also need to be identified, because in addition to values being one of the key success factors, they can also be a cause of failure. In his article, The Theory of Business, Drucker states that the largest number of companies that are in crisis have a system of values and beliefs that is not in line with the requirements of the enterprise (Janicijevic, 1997, p.128). Jovanovic, Miskovic, Sobajic & Rudic (2011) argue that „often long-used routines and procedures make it impossible to create and use new knowledge, because people are accustomed to using standard procedures and find it difficult to change their habits” (p. 219). The simplest way for an organization to adopt the desired value system and working principle is for their manager to behave accordingly.

Sharing key values and expectations among employees will make it easier to resolve most misunderstandings and other efforts in the functioning of the organization. According to Adizes (2008) „if there is an internal interconnectedness, mutual trust and respect, which must be a characteristic of a desirable organizational culture, the organization enjoys inner peace” (p. 184). Internal peace and stability give the organization the strength necessary to successfully cope with all the challenges of the environment.

3. RESEARCH METHODOLOGY AND BASIC HYPOTHESES

The survey was conducted by applying the written interviewing technique in the form of the Likert scale for measuring attitudes (1 – completely disagree, 2 – partly disagree, 3 – neither agree nor disagree, 4 – partly agree, 5 – completely agree), constructed according to Denison’s model (1999). The questionnaire was distributed in direct contact with the respondents and via the Facebook social network. The obtained data were analysed and interpreted by applying the IBM SPSS Statistics 21program.

In order to elucidate the factors of consistency in Serbian companies, a research study was conducted on a sample of 1,000 respondents employed in different companies in 29 Serbian cities. The data were collected during 2015. The presented results are a part of the research study of organizational culture in the Republic of Serbia’s companies.

Basic research hypotheses are:

1. There is a high consistency level in Serbian companies,
2. Attitudes about the level of consistency in domestic and foreign companies differ.

The following attitudes were examined in the research: The leaders and managers do what they say; There is a characteristic management style and a distinct set of management practices; There is a clear and consistent set of values that governs the way we do business; Ignoring core values will get you in trouble; There is an ethical code that guides our behaviour and tells us right from wrong; When disagreements occur, we work hard to achieve „win-win” solutions; There is a „strong” culture; It is easy to reach consensus, even on difficult issues and key issues;

There is a clear agreement about the right way and the wrong way to do things; Our approach to doing business is very consistent and predictable; People from different parts of the organization share a common perspective; It is easy to coordinate projects across different parts of the organization; Working with someone from another part of this organization is not like working with someone from a different organization; There is good alignment of goals across levels. The tables below will only show keywords to indicate the items mentioned.

In order to test Hypothesis 1, aimed at analysing consistency in the company lifecycle, a descriptive analysis was applied. In order to test Hypothesis 2, aimed at analysing differences in the degree of consistency understanding by employees in state- and privately-owned companies, the independent sample t-test was applied.

4. RESEARCH RESULTS

4.1. Sample Structure

If we look at the structure of the sample according to demographic characteristics, the majority of respondents are men (56%), while there are slightly less women (42%), and 2% of the respondents did not state their gender. The majority of respondents are between 31 and 40 years of age (38%) and have work experience of 6 to 15 years (39%). Also, most of them have completed high school (42%), and even more than half of them are in executive positions (64%).

Regarding the structure of the sample according to the characteristics of the company in which the employees were surveyed, it should be said that the largest number of respondents is employed in medium-sized companies (33.8%) and in the services sector (20.4%). Employees in domestic companies are far more represented (86%). In addition to those working in private companies (52%) and state-owned companies (44%), employees in socially-owned enterprises (4%), which ceased to exist in the interim, were also surveyed. Namely, in 2015, while the research was in progress, the Privatization Law came out, which stipulates that social capital must be privatized by December 31, 2015. In the meantime, some of them have been privatized, while some of them have been nationalized.

4.2. Analysis of the Consistency Factors in Companies in the Republic of Serbia

A descriptive analysis was used to obtain an average rating of the examined consistency attitudes.

Table 1 shows data on mean tendency and standard deviation relating to attitudes describing consistency, for a sample size of N = 1000 subjects.

Table 1. Ratings for the "consistency" factor attitudes

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
do what they say	1000	1	5	3,23	1,308
characteristic style	1000	1	5	3,47	1,188
clear and consistent	1000	1	5	3,41	1,138
ignoring values	1000	1	5	3,85	1,219
ethical code	1000	1	5	3,65	1,246
disagreements	1000	1	5	3,76	1,211
"strong" culture	1000	1	5	3,41	1,254

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
easy consensus	1000	1	5	3,24	1,209
clear agreement	1000	1	5	3,42	1,129
approach to doing business	1000	1	5	3,85	1,111
common perspective	1000	1	5	3,08	1,454
coordinate	1000	1	5	3,39	1,151
working with someone	1000	1	5	3,64	1,138
good alignment	1000	1	5	3,48	1,144
Valid N (listwise)	1000				
Average				3,49	

The average grade of consistency in work in companies in the Republic of Serbia is 3.49, which is between the positions of „neither agree nor disagree" and „partly agree". The result obtained is a slightly higher percentage compared to the neutral attitude about the presence of consistency at work in their companies. With this in mind we can say that the first hypothesis is partially confirmed.

4.3. Consideration of Differences in the Presence of Consistency Amongst Employees in Domestic and Foreign Companies in Serbia

Descriptive data for analysing the variables related to the consistency in work in companies are given in Table 2. It shows the number of respondents in each category (domestic / foreign company), mean value in each category, standard deviation from mean value and standard error.

Table 2. Descriptive data – consistency

Descriptives					
		N	Mean	Std. Deviation	Std. Error
do what they say	domestic	859	3,21	1,321	,045
	foreign	141	3,38	1,222	,103
	total	1000	3,23	1,308	,041
characteristic style	domestic	859	3,46	1,216	,041
	foreign	141	3,53	1,004	,085
	total	1000	3,47	1,188	,038
clear and consistent	domestic	859	3,40	1,153	,039
	foreign	141	3,50	1,046	,088
	total	1000	3,41	1,138	,036
ignoring values	domestic	859	3,85	1,216	,041
	foreign	141	3,84	1,244	,105
	total	1000	3,85	1,219	,039
ethical code	domestic	859	3,65	1,249	,043
	foreign	141	3,70	1,229	,104
	total	1000	3,66	1,246	,039
disagreements	domestic	859	3,74	1,222	,042
	foreign	141	3,88	1,143	,096
	total	1000	3,76	1,211	,038
"strong" culture	domestic	859	3,36	1,251	,043
	foreign	141	3,70	1,235	,104
	total	1000	3,41	1,254	,040
easy consensus	domestic	859	3,21	1,206	,041
	foreign	141	3,39	1,218	,103
	total	1000	3,24	1,209	,038

Descriptives					
		N	Mean	Std. Deviation	Std. Error
clear agreement	domestic	859	3,40	1,147	,039
	foreign	141	3,57	1,002	,084
	total	1000	3,42	1,129	,036
approach to doing business	domestic	859	3,88	1,101	,038
	foreign	141	3,67	1,157	,097
	total	1000	3,85	1,111	,035
common perspective	domestic	859	3,07	1,455	,050
	foreign	141	3,16	1,451	,122
	total	1000	3,08	1,454	,046
coordinate	domestic	859	3,38	1,156	,039
	foreign	141	3,48	1,119	,094
	total	1000	3,39	1,151	,036
working with someone	domestic	859	3,63	1,152	,039
	foreign	141	3,73	1,048	,088
	total	1000	3,64	1,138	,036
good alignment	domestic	859	3,46	1,160	,040
	foreign	141	3,62	1,032	,087
	total	1000	3,48	1,144	,036

Considering the fact that the average value of compliance with the surveyed attitudes in most cases is higher in foreign owned companies than in domestic companies, then it is expected that the total average value for all attitudes is higher for foreign companies ownership (3.58) compared to those domestically owned (3.48).

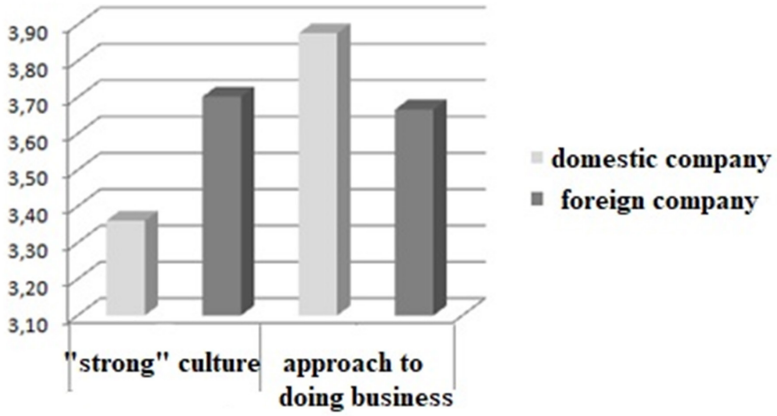
Table 3 shows the results of the independent sample t-test which represent the respondents in domestic and foreign companies. The first part of the table shows the results of Levene's test of equality of variations. The outcome of this test determines whether the t-value is used when the variance equality is implied (Sig> 0.05 and EVA) or the test value is used when the variance equality is not implied (Sig <0.05 and EVNA).

Table 3. T-test for domestic and foreign companies

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
do what they say	EVA	1,955	,162	-1,400	998	,162	-,166	,119	-,399	,067
	EVNA			-1,481	197,629	,140	-,166	,112	-,388	,055
characteristic style	EVA	10,110	,002	-,625	998	,532	-,067	,108	-,279	,144
	EVNA			-,716	213,462	,475	-,067	,094	-,253	,118
clear and consistent	EVA	2,161	,142	-,951	998	,342	-,098	,103	-,301	,105
	EVNA			-1,019	200,040	,309	-,098	,096	-,289	,092
ignoring values	EVA	,078	,780	,074	998	,941	,008	,111	-,209	,226
	EVNA			,073	186,611	,942	,008	,113	-,214	,230
ethical code	EVA	,026	,872	-,485	998	,628	-,055	,113	-,277	,167
	EVNA			-,490	190,577	,625	-,055	,112	-,276	,166
disagreements	EVA	1,531	,216	-1,253	998	,211	-,138	,110	-,354	,078
	EVNA			-1,314	196,290	,190	-,138	,105	-,345	,069
"strong" culture	EVA	,430	,512	-3,008	998	**,003**	-,341	,113	-,564	-,119
	EVNA			-3,036	190,235	**,003**	-,341	,112	-,563	-,120

Independent Samples Test		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
easy consensus	EVA	,004	,953	-1,602	998	,109	-,176	,110	-,391	,040
	EVNA			-1,592	187,954	,113	-,176	,110	-,394	,042
clear agreement	EVA	3,807	,051	-1,743	998	,082	-,179	,102	-,380	,022
	EVNA			-1,921	205,238	,056	-,179	,093	-,362	,005
approach to doing business	EVA	2,897	,089	2,083	998	**,038**	,210	,101	,012	,408
	EVNA			2,011	184,106	**,046**	,210	,104	,004	,416
common perspective	EVA	,018	,893	-,678	998	,498	-,090	,132	-,349	,170
	EVNA			-,680	189,244	,497	-,090	,132	-,350	,170
coordinate	EVA	,148	,700	-,915	998	,360	-,096	,105	-,301	,110
	EVNA			-,937	192,413	,350	-,096	,102	-,297	,106
working with someone	EVA	6,095	,014	-,974	998	,330	-,101	,103	-,304	,102
	EVNA			-1,042	199,741	,299	-,101	,097	-,291	,090
good alignment	EVA	3,869	,049	-1,626	998	,104	-,169	,104	-,373	,035
	EVNA			-1,769	202,708	,078	-,169	,095	-,357	,019

The results of the test show that there is a statistically significant difference in the attitude of „There is a 'strong' organizational culture" in favour of foreign companies, and in the attitude „Our approach to business is very consistent and predictable, i.e. there are established working procedures" in favour of domestic companies.



Picture 1. Statistically significant results – consistency

The result of the t-test for the attitude "Our approach to doing business is very consistent and predictable", i.e. there are established working procedures shows the statistical significance of higher scores for domestic companies. The reason for this probably lies in the fact that companies in Serbia have operated for decades in circumstances that implied security and stability, which give the opportunity to operate in a certain established way, without major changes. Thus, in the domestic companies, certain principles and values that are applied in the business and which are difficult to deviate from are deeply rooted. According to Nikolic, Savic, Cockalo, Vukonjanski & Jovanovic (2011), „the biggest problem organizational cultures in Serbian companies are faced with is the fact that the new behaviour model is based on old values" (p. 4623).

5. FUTURE RESEARCH DIRECTIONS

Future work could combine results for consistency in business and mission as factors of organizational culture stability, modelled on Denison, which would give a complete picture of the stability of companies in the Republic of Serbia.

6. CONCLUSION

The importance of the concept of consistency in business is in the strengthening of the stability factors of business entities.

Based on the results of the research, we can conclude that the first hypothesis that companies in Serbia have a high degree of consistency in work is only partially confirmed since we obtained an average rating of all parameters that determine consistency of 3.49, which represents the value between the neutral attitude (neither agree, nor disagree) and partly agree attitude when it comes to the consistency in work in their companies. As stability is important for the survival and competitiveness of organizations in the contemporary market, it is also a recommendation to companies in Serbia that certain actions should be taken to improve the consistency factor in companies.

The second hypothesis about the existence of differences in the presence of consistency in domestic and foreign companies is only partially confirmed in the case of the examined views „There is a 'strong' organizational culture" and „Our approach to business is very consistent and predictable, i.e. there are established working procedures". According to the respondents, foreign companies have a stronger organizational culture, while in domestic companies, the stabilization of working procedures is more pronounced, i.e. consistency and predictability.

Perceived differences related to certain aspects related to business consistency can serve as a way of improving the performance of domestic companies. Inherited principles and values from the previous period, which are considered useless in the modern times, seem to be the most serious obstacle to the development of domestic companies.

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USING THE QUALITY FUNCTION DEPLOYMENT METHODOLOGY FOR EFFECTIVE PLANNING OF TEACHING AND LEARNING PROCESSES

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Abstract: *This paper offers a reflection about the use of Quality Function Deployment (QFD) applied to a university course of accounting. The aim is to classify the most effective teaching methods (teaching strategies) with respect to specific relations: targets (stakeholders' needs)/needs (students' needs). In particular, learning outcomes (LO) are expressed in terms of homogeneity or heterogeneity in learning (at the beginning, underway and outbound) that a class of students shows with respect to the initial target/needs of an accounting course. The study has been carried out through the observation of the learning outcomes of different class of students, in three consecutive years of an accounting course, carried out by the same teacher. The results of the experimentation have demonstrated that specific target/needs are associated, over time, to the same teaching strategies. The continuous process carried out by the teacher about the course design (with the QFD), the managing of education in class, the evaluation/self-evaluation of the educational processes carried out and of the improving/standardization (with the QFD) of the teaching strategies with respect to the initial target/needs of the course, has allowed a classification of the most effective teaching strategies with respect to the evolution over time of the relations target/needs (self-training of the teacher).*

Keywords: *QFD, Quality Function Deployment, Higher Education, Teaching Methods, Teaching Quality, Learning Outcomes, Accounting, House of Quality.*

1. INTRODUCTION

The Quality Function Deployment has been applied in different way in higher education. This paper refers to those studies which have used the QFD in order to translate the students' needs in "technical specifications" (most effective teaching strategies) useful to the satisfaction of those needs (e.g. Lam & Zhao, 1998; Chou, 2004; Ictenbas & Erylmaz, 2011).

The aim of this article is the use of QFD in order to standardize the teaching strategies in an accounting course in a correlated and dynamic manner. The relation and the dynamic aspects are an answer to the complexity of teaching and, with respect to the analysed literature, represent an unexplored aspect that this paper seeks to deepen. In this sense, this approach has been experimented in an accounting course carried out from the same teacher with different classes during three consecutive years.

The results of the experimentation have demonstrated that specific target/needs are associated, over time, to the same teaching strategies. The continuous process carried out by the teacher about the course design, the managing of education in class, the evaluation/self-evaluation of the educational processes carried out and of the improving/standardization of the teaching strat-

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egies with respect to the initial target/needs of the course, has allowed a classification of the most effective teaching strategies with respect to the evolution over time of the relations target/needs and the self-training of the teacher.

In particular, this paper seeks to verify the possibility to extend the use of the QFD in various moment of education (initial, underway and final) in order to classify the most effective strategies with respect to the specific target/needs relations in an accounting course.

The QFD presented during this work are suitable to provide to an accounting teacher the information about the existing relationship between the targets of the course (according to a specific classification) and the related needs that a class of students can present with respect to each one of them (homogeneity/heterogeneity in the learning) and the most effective strategies useful to satisfy those target/needs.

In particular, the QFD has been used for the design of an accounting course composed of classes with a considerable number of students (an average of 200 students per class). The use of QFD at the beginning, underway and at the end of each one of the years of experimentation have allowed to analyze the LO of different classes of students.

The analysis allowed to analyse the LO of the class of students with respect to different initial target/needs in terms of the variations from a homogeneity state top-bottom (low level pf knowledge of the students) or heterogeneity in the learning, to a homogeneity bottom-up, depending of the different strategies adopted by the teacher. In this sense, the most effective strategies, useful to transform a low target/need (homogeneity top-bottom of heterogeneity) in a high one (homogeneity bottom-up), have been standardized.

Starting from the evidence of the literature on the study of the QFD in higher education, the aim of this paper is to demonstrate the opportunity to use the QFD in order to satisfy the needs of all the customers (stakeholder, teachers and students) in a correlated way over time. The QFD has never been used in order to fill, in a dynamic way, the educational gap of the students and teachers with respect to the expectation of the stakeholders. In this sense, the paper shows the results of the experimentation of QFD for the design and the standardization of target/needs and teaching strategies in the three years of experimentation in an accounting course.

This work is structured in three parts. The analysis of the literature anticipates the description of the methodological approach used in this experimentation. In the following part the results of the research are discussed. Finally, reflections for future research development are considered.

2. LITERATURE REVIEW

Higher education is dramatically changing. The past universities' environment, in which education and teaching was considered as detached services with respect to the overall markets, have been replaced by an always more competitive framework (Quinn, Lemay, Larsen, & Johnson, 2009; Sagnak, Ada, Kazancoglu, & Tayaksi, 2017), in which higher education has to be considered as a real product (Sangeeta , Banwet, & Karunes, 2004; Tsinidou, Gerogiannis, & Fitsilis, 2010). In this new climate, quality of teaching, learning, courses, faculties, and universities is becoming a central issue.

The focus on customer (student) satisfaction, the necessity of continuous improvement of services and programs and the new awareness of higher education to be part of a smart environment, allow the increasing of interests in quality evaluation (Jaraiedi & Ritz, 1994). The consciousness of higher education institutes to provide services to a greater number of stakeholders, often hard to classify and recognize, allows to reconsider the role of students, teachers, staff, and stakeholders in the process of quality evaluation.

QFD is an instruments of quality evaluation developed by Mizuno and Yogi Akao in the 1960s and then successfully applied in industry and services, thanks to its ability to take into consideration every stakeholder of a product (Sahney, Banwet, & Karunes, 2006).

2.1. QFD in higher education

In the literature, a part of the papers has investigated the use of QFD in order to reach a better comprehension about the possibility to obtain a substantial improvement of quality in higher education in specific contexts (Giilser & Alpay, 1998; Sagnak, Ada, Kazancoglu, & Tayaksi, 2017).

Several papers have been written in order to promote QFD as a useful methodology to design, redesign, or improve university's curricula (e.g. Donald S., 1995; Stampen & Hansen, 1999; Liu, Lee, Lin, & Tseng, 2013).

Despite listening the voice of customers and its correlation between best practices, in order to translate them into a higher quality course program, is one of the fundamental applications of QFD (Tsinidou, Gerogiannis, & Fitsilis, 2010), this method is not only linked to this aim. In fact, QFD has been also used to reach a specific level of quality in order to obtain institutional accreditation (e.g. Bier & Cornesky, 2001). Moreover, it has been suggested that the usefulness of QFD approach to quality evaluation for higher education institution could be considered also for its efficiency, because of its capability to reduce the complexities of managing processes (Motwani, Kumar, & Zubair, 2008).

2.2. QFD, higher education, and teaching methods

The methodology of QFD have been used in order to translate the students' needs into the most effective best-practice (teaching methods) suitable to guarantee an always better level of quality in higher education (e.g. Lam & Zhao, 1998). This use of QFD has been carried out in several fields as nursing (Chou, 2004), engineering (Ogot & Okudan, 2007; Mukaddes A., Bagum, Anisul, & Mohammad Muhshin, 2012), management (Ezzell, Cudney, Phelps & Mazur, 2016; Backru, 2018).

Since that attention for the achieving of a high level of quality standards depends on the listening of students' voice, these articles experimented different methods in order to involve students into the process of identification of quality requirements: focus group and brainstorming (Chou, 2004), surveys with open questions and comparison with the literature (Ogot & Okudan, 2007), and close surveys (Ezzell, Cudney, Phelps & Mazur, 2016; Backru, 2018).

In some cases, the focus of the articles was on the skills that have to be owned by students in order to reach a level of employability as higher as possible. In these cases, the field involved in the analysis were industrial engineering (Ictenbas & Erylmaz, 2011) and financial accounting

(Raissi, 2018). In these cases, the methods used to listen to the voice of customers were composed by questionnaire administrated to students, graduated students and employers (Raissi, 2018), or the analysis of job advertisements (Ictenbas, 2011).

In these articles, the identification of the teaching strategies in order to complete the HOW section of the House of Quality in the QFD have been carried out through different methods: focus group composed by students (Chou, 2004), in-depth literature analysis (Ogot & Okudan, 2007; Ezzell, Cudney, Phelps & Mazur, 2016), and the contemporary use of literature review and interviews with the students (Backru, 2018). In the cases of articles focused on the external customers, the teaching strategies have been defined directly by the teachers of analysed courses (Ictenbas & Erylmaz, 2011), or by a QFD team composed by the head of two departments and the director of the institute (Raissi, 2018).

In order to complete the QFD matrix with the correlation between the stakeholders' needs and teaching strategies a considerable number of methods have been used. In some cases, the students have been involved in this process with questionnaires (Chou, 2004) and with focus groups (Ezzell, Cudney, Phelps & Mazur, 2016). In other cases, the correlations have been decided by the teacher of the course (Backru, 2018; Ictenbas & Erylmaz, 2011; Raissi, 2018).

The implementation of the QFD method provides for a discussion about the frequency of the assessment. It has been recommended with different solution, e.g. at the beginning of the course with periodic checkpoints (Ezzell, Cudney, Phelps & Mazur, 2016), on a regular time basis (Ogot & Okudan, 2007).

3. THE COMPLEXITIES OF TEACHING AND THE ROLE OF QFD

Classifying the most effective teaching strategies in a specific context (e.g. disciplinary, academic, social, etc.) implies the consideration about the complexities of teaching (Casey, Gentile, & Bigger, 1997). In particular, teaching is achieved over time and in a context that is relational, disciplinary, social, etc.

Considering the relational aspect means to recognize that the satisfaction of students' needs come to fruition through the satisfaction of stakeholders and teachers' needs, in a related way.

Considering the time dimension means to recognize that such relations are continuously changing and that everything is influenced from the disciplinary, social and cultural reference framework (Verna, 2017; Verna, Antonucci, Sargiacomo, & Venditti, 2019).

Referring to the relational aspect, listening to the stakeholders' needs (implemented in a continuous time at the level of course of study) and the translation of these needs into targets (of the course of study and single teaching courses) allow to identify the relative students' needs, in terms of the gap between the stakeholders' expected learning outcomes (target) and those actually reached by the students.

With respect to this context of target/needs, or with respect to (potential) gap of educational needs which have to be satisfied, teachers' training needs have to be listened. In this case too, the needs are listened in relation to those of the students, i.e. the stakeholders. In particular, the educational needs of teachers are listened in terms of gaps between the knowledge/competence

owned by teachers about the most effective teaching strategies for the achievement of specific target/needs and what is indeed needed to satisfy this relation.

Listening and satisfaction of all the needs is carried out during the time in which teaching is achieved. In this sense, the evaluation of the satisfaction level of students' class needs, with respect to the targets (learning outcomes – LO), at the beginning, underway and outbound, and that of the teachers (evaluation/self-evaluation) with respect to those LO, allows the teachers to standardize the more effective teaching strategies that are suitable for the achievement of specific target/needs.

Therefore, the use of QFD during three consecutive years has allowed the production of a classification of the more effective teaching strategies with respect to every type of target/needs related to an accounting university course. In this sense, with respect to each category, the target/needs relations linked to the three years accounting course have been standardized.

In the following paragraphs, this article deepens the research methodology used in order to reach these goals and describes the reached results.

4. THE QFD AND THE DESIGN OF AN ACCOUNTING COURSE: TARGETS, NEEDS AND TEACHING STRATEGIES

In this empirical application, QFD has been used in order to design the accounting course in each one of the years. Figure 1 (QFD1) represents the design of the first year. In particular, the QFD1 create a relation, on the one hand, with the target of the modules of the course and the related students' needs (Figure 1, first and second column), and on the other hand, with the teaching strategies (higher row).

The targets of the course have been defined by the teacher in relation to general targets indicated by the Teaching Commission (institutional organ of the course of study to which the accounting course is related) and classified on the basis of the Dublin descriptors[3] and classified as "basic" and "advanced".

Table 1. Description of teaching strategies (Verna, 2014)

Strategies	Methods	Description
Strategy 1	Class / tutorial (explain, demonstrate, perform)	*The Strategy 1* is the classical method of conducting a lesson. As shown in Table No.1, this strategy provides an initial introduction of the topic to be addressed (articulated in explanation and practical demonstration) followed by a tutorial (which in the course of accounting often results in a financial accounting survey) carried out by students themselves. At the end of each educational intervention regardless of the strategy adopted it is always envisaged a brief summary, but important (reinforcement) of the argument presented. This type of strategy is particularly effective with respect to learning objectives related to both the knowledge of concepts and procedures and the ability to use them in "operational expertise". 1 The strategy is also presented as a slow, analytical and facilitative progression of topics, particularly suited to a classroom of students neophytes "non-experts".

[3] Qualifications Frameworks in the European Higher Education Area (QF-EHEA), Bologna Process, National Qualification Frameworks, 2005.

Strategy 2	Role playing / tutorial / class (demonstration - stimulus, perform, discuss, explain)	*The strategy 2*. In this case, the lesson is presented with a role playing (Capranico, 1997; Bushing, 2004), which introduces (stage presentation) the information necessary to carry out the next tutorial. The information can also be introduced without role playing. Role playing is not used in the traditional way "learning by doing, imitating, etc.." But it is used to draw the attention and motivation of the learner in addition to ability to find / select the relevant information independently. At the end of the exercise the teacher discusses with students the results achieved by them, summarizing and synthesizing the issues deled with the lesson. The time devoted to discussion and understanding in this case is greater. Although the objectives reached with this strategy are the same as previously seen, the strategy 2 (inductive) is more suitable for students who already have (or have reached) certain knowledge and skills.
Strategy 3	Case / class (perform, discuss, explain)	*The strategy 3* combine the two classical methods: lecture and case. The case is particularly suitable for the learning of intellectual skills (problem solving), the lesson is imperative to clarify doubts, gaps and discuss the issues raised in the case, and then reinforce learning. The main advantages for students lie the practical application of their knowledge, a high involvement and a greater learning and "memory" of what executed. The third strategy involves the use of closed cases in which there is a right answer (or two or three) in order to prove the "technical process" to be used for a certain type of problem. In the course of accounting used as a reference, given the high number of students, the case is carried out by students individually or at most in pairs. Compared to this strategy it counts as already observed for the previous year (strategy 2) as is in terms of the objectives and the type of students to whom it is addressed.
Strategy 4	Project work / class (perform, discuss, explain)	*The strategy 4* is particularly useful when the course is at an advanced stage or the professor have a classroom particularly trained. The strategy 4 offers the advantages of the active methods (discussed above) and allows the learner to develop, strengthen and expand the ability to use concepts and techniques already acquired (Baldassarre, 2003) in addition to the advantages offered by the interactions in a group work. In this case too, objectives and students to whom it is mainly addressed are the same as in the previous strategy.
Strategy 5	Class / self-study / questionnaire (or closed case) (demonstration, perform, discuss, explain)	*The strategy 5* consists of a brief introduction of the teacher on the outline of the subject of the lesson (15/20 minutes) followed by a moment of self-study on synthetic and clear hand-outs allowing the student to learn and reinforce what the teacher introduced and to test their learning in the following questionnaire. Self-study in the course of accounting has been used for a time not exceeding 30 minutes. The remaining time was used to carry out the questionnaire (20 minutes) and the discussion in the classroom. The strategy 5 is particularly effective for knowledge objectives and students' classes with less expertise and especially facilitates the learning of complex issues as it allows to deal with the same topic with different approaches: listening, study, self-evaluation and comparison.
Strategy 6	Class / questionnaire / class (or closed case) (explain, perform, discuss, summarize)	*The strategy 6* is a classical one, particularly effective for the transmission and examination of knowledge and overfill any gaps identified. Even in this case students not particularly experienced are the favourite recipients of this teaching strategy equally effective even for "classes more experienced."
Strategy 7	In-class hands-on activities	*The strategy 7* is a learning by doing method. It consists of task simulations, problem-solving exercises. Specifically, in this experimentation, the teacher used it as practice simulation of accounting entries of invoices, credit notes, etc. Finally, a plenary discussion of the results is planned.

The students' needs (third column) are expressed in terms of homogeneity (bottom-up or top-down) or heterogeneity, referred to the level of knowledge possessed by the class of students at the beginning with respect to the course targets, the first year of experimentation (Verna, 2014;

Verna, Perozzi, 2014). The learning outcomes (LO) are expressed in terms of homogeneity and heterogeneity in the learning shown by the class of students with respect to the targets of the course at the end of each module, for each year of experimentation.

The evaluation of the needs and the LO is made through objective tests[4]. Every item has a weight that has been translated into a 0-10 scale, and it has allowed to individuate the entry needs and the and the LO (underway and outbounds) of students' class with respect to every target (0 was null, 10 was the maximum). The QFD1 shows the needs related to the entry test of first year of this empirical experimentation.

The teacher's needs have not been directly represented in the QFD of this paper, but indirectly through the standardization of teaching strategies that has been realized by the teacher of the first year of experimentation. The teacher's needs have been listened through a qualitative test, based on the teaching strategies (Table 2), administered to the teacher for self-evaluation and to the students, together with the learning evaluation test (at the end of the first module, at the end of an intermediate module, and at the end of the last module for each one of the years of empirical test).

Targets			Needs	Strategy 1	Strategy 6	Strategy 5	Strategy 2	Strategy 3	Strategy 4
K&C	Basic	A	8	+					
		B	9	+					
	Advanced	C	9	-	-	-			
		D	9	-	-	x			
Applied K&C	Basic	E	9	+	-	-			
	Advanced	F	10	+	-	x			
Judgment Autonomy	Basic	G	10	+	-	x			
	Advanced	H	10	+			+	-	-
		Homogeneity top-down		334	141	83	50	30	30
		Weights of educational strat.							

Sign	Value	Kind of relationship
+	5	Strong
-	3	Average
x	1	Weak

General accounting	A	Recognize the logic of functioning of financial and economic accounts
	B	Recognize the different nature, object and functioning of account items
National accounting principles	C	Recognize the principles that guide the formation of balance sheet
Capital / Income	D	Recognize the component of income from that of capital
Accounting recognition of the main management operations	E	Accounting recognition of the main management operations
Balance sheet	F	Draw up the balance sheet
Balance sheet	G	Carried out the linkages between the management operations recognized in double-entry system and the balance sheet items
	H	Evaluate the results of the balance sheet

Figure 1. QFD1

The teaching strategies (Table 1) have been identified referring to the empirical study carried out during five years of accounting course (Verna & Perozzi, 2014). The aim is the extension of the research, carried out in the previous years (Verna, 2014), to the time and relation dimensions that characterize the complexity of teaching. In this sense, the teaching strategies defined in the

[4] The test administered to the students are composed by multiple-choice questions, close cased, exercise with one or more known solutions.

QFD1, have been experimented by the teacher in each one of the three years of the course and they have been standardized depending on their effectiveness in satisfying the target/needs.

Specifically, the correlation shown in the QFD1 matrix between target/needs and teaching strategies is established by the teacher in relation to the initial needs of the class of students (entry tests). In this case, those needs have highlighted a homogeneity of the class towards lower values (high needs). The teacher sets up the correlation inside the matrix depending on the legend shown below. Multiplying the value associated to the symbol (+,-,x) times the needs, the results is the value of the strength or weakness of the correlation between the strategies and the target/needs. The results shown by the QFD identify the Strategy 1 as the more suitable teaching method with respect to that specific class. Strategies 6 and 5 are respectively the second and the third most effective strategy with respect to the relation target/needs in this first phase of course beginning. During the accounting course and at the end of the course, the teacher has to verify if the relation that has been established in the matrix is correct, depending on the LO of the students during the time.

In the following paragraphs, the details of the empirical test of QFD in the three years of an accounting course are presented, offering an analysis of the reached results for each one of the years.

5. THE QFD AND THE STANDARDIZATION OF TEACHING STRATEGIES IN AN ACCOUNTING COURSE

At the end of the first year of the course the teacher standardizes the most effective teaching strategies useful to satisfy the initial target/needs relations (first and second column of QFD1). For this aim, the teacher uses the QFD2, in which the teaching strategies are presented in a different order with respect to the initial project. The strategies respect the hierarchical order linked to the LO that the strategy has allowed to reach to the class of students, at the end of the first year of this empirical experimentation. Specifically, QFD2 highlights the initial target/needs relation (first and second column), placing side by side a third column related LO of ending of the course. The lower is the LO related to each target/need, the higher is the ability of the strategy, adopted by the teacher, to satisfy such relation.

For example, the strategy 1 allowed the teacher to specifically satisfy the specific relation related to target/need: "K&C – Basic – General accounting (identify …) / 8'' and that of general satisfaction of the target/needs relations of the accounting course (350, that is about the 95% of the maximum possible result given the needs – 370). In this sense, the correlation in the matrix has been carried out by the teacher depending of the self-training process that the same teacher has done during the course, monitoring the time and relational dimension of teaching. With respect to such dimensions, the teacher has evaluated his/her ability to reduce the gap between LO and target/needs of the course, through the continuous process of designing (QFD), managing of class teaching, evaluation of the results (evaluation tests about LO and about the appreciation of students, self-evaluation of the teacher) and improving – corrective actions experimented by the teacher during the accounting course. In particular, at the end of each module, the teacher has administered one evaluation test of learning. After that, the teacher has evaluated the reached results and, in case of negative outcome, has filled out the self-evaluation test.

The comparison between the self-evaluation carried out by the teacher and the appreciation test made by the students (administered them at the end of the first module, at the end of an inter-

mediate module and at the end of the last module) has allowed the teacher to identify potential problems (e.g. managing the strategy, unsuitableness of the strategy with respect to the target/needs, etc.), and to experiment the corrective actions in the following modules (new teaching strategy, better competence in managing the strategy, etc.).

So, the comparison between the two evaluations allows the teacher to identify his/her training gap (related to the teaching strategies), or the training needed by the teacher, suitable to identify the corrective actions that satisfy the target/needs relation. Specifically, with respect to the targets related to the acquisition of knowledge (basic and advanced K&C) and the related needs, the strategies experimented by the teacher have been those which have been defined in the QFD1. The LO presented near to zero scores already during the tests carried out at the end of the first and the second module.

Table 2. Teaching strategies – Evaluation/self-evaluation questionnaire[5]

ID	Self-evaluation made by the teacher	Evaluation made by the students
1	Do I adopt effective teaching methods?	Does the teacher adopt effective teaching methods?
2	Do I introduce a new method (teaching strategy) showing clearly the rules and the aims?	Does the teacher introduce a new method (teaching strategy) showing clearly the rules and the aims?
3	Do I propose different typologies of teaching strategies (class, laboratory, simulations, etc.) related to the target/needs?	Does the teacher propose different typologies of teaching strategies (class, laboratory, simulations, etc.) related to the target/needs?
4	Do I adopt different strategies in order to alternate the individual work with that of the group, related to the target/needs?	Does the teacher adopt different strategies in order to alternate the individual work with that of the group, related to the target/needs?
5	Do I adequate teaching instruments to the class needs?	Does the teacher adequate teaching instruments to the class needs?
6	Do I always define time of the lesson in order to leave time for questions, reflections and conclusions?	Does the teacher always define time of the lesson in order to leave time for questions, reflections and conclusions?
7	Do I respect the timing of the lesson (beginning, end)?	Does the teacher respect the timing of the lesson (beginning, end)?
8	Do I use effective instruments during the lessons of the module, useful to clarify, simplify and facilitate the learning?	Does the teacher use effective instruments during the lessons of the module, useful to clarify, simplify and facilitate the learning?
9	Do I verify the presence and the functioning of the instruments in the class before the lessons?	Does the teacher verify the presence and the functioning of the instruments in the class before the lessons?
10	Are the teaching material that I give to the students (practice exercises and lesson notes) clear and useful to the satisfaction of the relation target/needs?	Are the teaching material that the teacher gives to the students (practice exercises and lesson notes) clear and useful to the satisfaction of the relation target/needs?

With respect to the target/need "K&C – Basic - Recognize the nature, object and functioning … / 9" the teacher has adopted the strategy 1 in order to introduce the theoretical concepts and demonstrate the application ways these concepts.

[5] This questionnaire is a brief part of a wider questionnaire, related to a innovative holistic approach (L'Ascolto ®) used to reach the continuous improving of teaching and learning processes, undergoing testing in an Italian university.

With respect to the target/needs "K&C – Advanced - Recognize the principle … / 9" the teacher continued with the utilization of Strategy 1 in order to introduce new topics, to demonstrate them through guided practice exercises and to analyse them plenary. Instead, the teacher has used the Strategy 5, 6 and 7, alternate them in order to support the learning.

The addition of the new Strategy 7 is the result of a corrective action carried out by the teacher with respect to the targets of "Applied K&C". The positive results (LO), derived from the experimentation of such Strategy 7, lead the teacher to use it for the target "K&C – Basic" and "K&C – Advanced".

The strategy 7, with respect to the target "K&C – Basic" and "K&C –Advanced" has been applied only in order to support the topics with increasing level of practice exercise.

In the QFD2 the LO show how the target/needs relation about basic and advanced K&C has been almost totally satisfied by the strategies 1, 7, 6 and 5. These results have been confirmed from the appreciation tests carried out by the students (continuous process of evaluation/self-evaluation).

Referring to the target of "Applied K&C – Basic" and "Applied K&C –Advanced", the LO have been initially unsatisfying, showing high values, only little decreasing, in the first and second final module test.

With respect to such (basic and advanced) target/needs relations, the teacher had adopted the strategies presented in the QFD1. Strategy1 was adopted in order to introduce the topics, carry out demonstrations and guided exercises, and the Strategy 6 was adopted in order to support the learning. In this case, the evaluation/self-evaluation process allowed the teacher to observe a negative judgement with respect to the strategy 6, a clear discrepancy with the teacher's self-evaluation. In particular, the students given a score of 1 (absolutely not) to the question 1 "adopt effective teaching methods, or useful teaching methods for class comprehension" and a score of 1 to the question 4 "the teacher adapt teaching methods and instruments to the class needs"

With respect to the same items, during the self-evaluation the teacher had expressed positive evaluations, considering the teaching strategy suitable to satisfy the target/needs relation. The following comparison, carried out by the teacher with the class of students, has allowed the teacher to reach a better comprehension about the emerged problems during the utilization of such strategies and to define and carry out the corrective actions for the next modules. In particular, the effectiveness of this strategy was impeded by the target/needs relations: "Applied K&C" with high educational needs. The strategy 6, mainly based on the autonomous work made by the students (questionnaire), instead of clarify and support what have been already treated by the teacher, created more doubts that the students were not able to communicate to the teacher without create confusion and delate in the timing of the lesson. The technical aspect related to the accounting topics, and the specific target "Applied K&C", together with the high educational needs, was in stark contrast with such type of teaching strategy (Table 2). For examples, the Strategy 7, mainly based on practice exercises, is more suitable for the development of such competencies.

In the following modules (third and fourth), the teacher applied the Strategy 1 (in the manner seen before) and has indeed introduce the Strategy 7 in order to support the knowledge/competences gradually acquired by the students. The LO of the students have been satisfying already at the end of the third module, highlighting a clear improving in the final course test (Figure 2).

Targets			Needs	Learning Outcomes	Strategy 1	Strategy 7	Strategy 6	Strategy 5	Strategy 3	Strategy 2	Strategy 4
K&C	Basic	A	8	0	+	-	x	x		x	
		B	9	1	+	-	x				
	Advanced	C	9	2	+	+	+	+		x	
		D	9	2	+	+	+	+			
Applied K&C	Basic	E	9	2	+	+					
	Advanced	F	10	3	+	+					
Judgment Autonomy	Basic	G	10	2	+	+			+		
	Advanced	H	10	5	-	-	x	x	+	x	x
			Homogeneity top-down	Homogeneity bottom-up	350	316	117	108	100	27	10
			Weights of educational strategies								

Figure 2. QFD2

Referring to the target/needs "Independence of judgment - Basic and Advanced", these have been treated by the teacher with the different strategies presented in the QFD1. In particular, the basic target/needs "Carry out the links between management operation …/10", have been treated gradually by the teacher from the first to the last module of the course, using the Strategy 1. The presentation of each new accounting registration has been associated with the related positioning of the balance sheet entry. The support of the same concepts and the in-depth analysis have been faced with the Strategy 6. The results in terms of LO, in the first and in the second module have been the same as seen before, with the same negative evaluations both in the appreciation tests and in the direct comparison with the class of students.

In this case too, the adoption of the Strategy 7 has allowed the satisfaction of the target/needs relations in the following modules. In particular, practice and structured exercises have allowed the teacher to support, at the same time, the target/needs related to the accounting entries, them positioning in the balance sheet and the identification of the links between these aspects.

Referring to the target/need "Judgment Autonomy - Evaluation of the balance sheet results / 10", the LO have been different. Specifically, the balance sheet evaluations often represent the final aspect of the accounting course program (basic) in a bachelor degree program, in which such topics are deepen in a following accounting course (advanced). Such targets have been faced in the third and fourth module of the course. In this case, the available time for the improving corrective action carried out by the teacher has been less the before. In particular, the test results of the third module have highlighted LO with identical values with respect to the needs (10). In order to satisfy those target/needs, the teacher experimented the teaching strategies detected as the most effective in the QFD1 (i.e. 1,2,3 and 4).

The comparison between the evaluation/self-evaluation tests allowed the teacher to highlight some critical aspects. In this case the question number 1 and 4 in the appreciation test completed by the students, highlighted a respective score of 1 and 2. From the comparison with the students, the teacher verified that, despite they enjoyed the Strategy 2 as they found it interesting and stimulating for the listening of the lesson (Role playing/tutorial/class), they did not have the opportunity di experiment directly their ability to evaluate and interpret the balance sheet.

With respect to the managing of the Strategy 4, the students allege confusion in the class, delate in the execution time and absence of time for the conclusions. The students appreciate instead the Strategy 3, despite it has been used only once by the teacher.

The corrective actions, identified by the teacher, concerned the experimentation of the Strategy 3, proposing to the students some increasing difficult case studies. The LO related to the last

module of the course have highlighted an improving and a high appreciation of the students in the appreciation test, also if the available time did not allow to consider further improvements for this year of experimentation.

6. THE QFD AND THE TEACHING STRATEGIES IN AN ACCOUNTING COURSE, BETWEEN INNOVATION AND STANDARDIZATION.

In the following years, the classed of students have shown the same homogeneity of needs (top-down). So, the teacher has confirmed the most effective strategies of the previous year, with respect to each category of target/needs.

The only variations were related to "Applied K&C – Basic" and "Applied K&C – Advanced", in which Strategies 2 and 3 have been experimented with more frequency. The teacher, during the previous year, had verified (evaluation/self-evaluation process) the appreciation of the students with respect to these strategies.

In particular, the Strategy 2 (role playing / tutorial / class) have been considered useful to the listening motivation. Thus, the teacher decided to experiment Strategy 2 in order to introduce case studies or to summarize and support the acquisition of specific competencies. The positive results of this experimentation are shown in the Figure 3.

Referring to the Strategy 3, the success of such strategy for the target "Judgment Autonomy", bring the teacher to experiment this Strategy in order to verify the opportunity so satisfy the relation target/needs "Applied K&C – Advanced". The teacher used this strategy as a support for "Applied K&C – Basic" and "Applied K&C – Advanced" and as a motivation for the students because it creates an alternative to the use of Strategy 7 and a different way to face the same topic.

Targets			Needs	Learning Outcomes	Strategy 1	Strategy 7	Strategy 3	Strategy 6	Strategy 5	Strategy 2	Strategy 4
K&C	Basic	A	8	0	+	-		x	x	-	
		B	9	1	+	-		x			
	Advanced	C	9	2	+	+		+	+	-	
		D	9	2	+	+		+	+		
Applied K&C	Basic	E	9	2	+	+	x				
	Advanced	F	10	3	+	+	-				
Judgment Autonomy	Basic	G	10	2	+	+	+				
	Advanced	H	10	5	-	-	+	x	x	x	x
			Homogeneity top-down	Homogeneity bottom-up	350	316	139	117	108	61	10
			Weights of educational strategies								

Figure 3. QFD3

During the final year of experimentation, the teacher has confirmed the same teaching strategies used in the previous year. The needs shown by the class of students (the same of the previous year) have confirmed, with respect to the same targets, the effectiveness of the same strategies.

The content of the QFD completed at the end of the third year of experimentation was exactly congruent with the QFD3.

7. CONCLUSION

This paper tries to detect how specific target/needs relations, in a specific context (accounting), need a constant listening, related to the needs emerging from the underway educational processes (evaluation tests, appreciation tests and self-evaluation tests). Therefore, the strategy does not represent, per se, the solution for an excellent learning, but the continuous and correlated consideration of the emerging needs from the referring context (disciplinary, social, cultural, etc.). The ability to monitoring and interpret the complexity of teaching, through plural and multidimensional approaches, which have to take into account the numerousness of the involved variables, the relations between these variables and their variability over time, conduct to a process of efficient teaching and learning (evaluation and self-evaluation of students and teachers).

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RISK TRANSMISSION AMONG STOCK MARKETS IN LAC REGION: FINANCIAL CRISES IMPACT

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Abstract: *The main goal of this research work is to analyse risk transmission, in a dynamic context, between stock markets of the Latin American Countries (LAC) region, in the context of the subprime and European sovereign debt crises. Specifically, we intend to evaluate the volatility transmission between markets, as well as the respective asymmetric effect. For this purpose, we use a volatility measure based on opening, closing, maximum and minimum daily prices. We intend to answer the following questions: do Latin American stock markets show higher levels of volatility resulting from the financial crises of 2008 and 2010? The results suggest there is a risk transmission resulting from the subprime crisis. However, the empirical evidence points to a decrease in risk during the sovereign debt crisis of 2010, i.e. the high volatility during the subprime crisis tends to decrease in the period 2010-2012.*

Keywords: *Volatility, Stock markets, GARCH models.*

1. INTRODUCTION

Since the pioneering work of Markowitz (1952) volatility has been one of the main focuses in financial studies, playing a crucial role in risk analysis and decision-making processes concerning financial assets. Thus, predicting and estimating volatility has been a subject of great relevance in empirical and theoretical research in the financial area, since anticipating the future behaviour of asset volatility will certainly help in reformulating tight investment strategies.

Market volatility is a key element in the extension of financial theory and markets, which has attracted the attention of researchers and practitioners. Campbell, Lo and MacKinlay (1997) argue that what differentiates the financial economy is the central role played by market uncertainty, because in the absence of uncertainty, the dilemmas of financial economy are reduced to "elementary microeconomics exercises." A clear fact involving volatility, regardless of the perspective analysed, is that it is related to the instability and turbulence of financial markets and investors' behaviour. Thus, correct analysis of volatility estimation will be important, not only in outlining a good asset management strategy, but also to understand moments of uncertainty in financial markets.

Some recent studies have analysed the impact of the 2008 financial crisis on foreign exchange markets (Baba and Packer, 2009) and on stock markets, particularly Syllignakis and Kouretas (2011), Ben Rejeb and Arfaoui (2016) and so many others. Specifically, these studies argued that

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volatility is present in financial markets, and is high during periods of financial crisis, especially during the subprime crisis.

The objective of this research is to study the risk transmission among the main stock markets in the LAC region, because of the subprime and European sovereign debt crises. The purpose of this analysis is to answer two questions: (i) do Latin American stock markets show high levels of volatility resulting from the financial crises of 2008 and 2010? (ii) when the asymmetrical effect occurs, through the occurrence of potential losses, can the diversification of portfolios be questioned? This research presents an important contribution to the existing literature. This contribution is related to the study of dynamic volatility in these regional markets, in the context of the financial crises of 2008 and 2010. As far as we know, recent studies analysing these regional markets in the context of the subprime crisis were by Gamba-Santamaria et al. (2017), Cardona, Gutiérrez and Agudelo (2017), Chuliá, Guillén and Uribe (2017) and Güloğlu, Kaya and Aydemir (2016). In our approach we construct a measure of volatility that focuses on opening, closing, maximum, and minimum daily prices. Additionally, we analyse a sample period with two sub-periods of financial crisis and a sub-period of rising stock markets.

We should also refer the importance of these emergent markets in the financial context. According to Mensah and Premaratne (2014), with the elimination of barriers to investment in recent years, many countries have undergone the process of economic and financial integration. This leads to the benefits of international diversification, mainly because of the various financial crises that have led to significant changes in financial markets around the world. In this context, and considering the large inflows of capital, it is important to understand the volatility between Latin American markets. Understanding how market volatility is transmitted could help in implementing efficient diversification strategies.

This paper is organized in 6 sections: Section 2 presents the literature review on market volatility. Section 3 describes the methodology used. Section 4 presents the data description and Section 5 the results. Finally, Section 6 concludes.

2. LITERATURE REVIEW

Volatility is a very important topic in the study of financial markets, although it is not directly observable, with the respective estimation process being subjective and controversial. The risk/return binomial is a very relevant topic for certain investors, particularly when they are risk averse. This relationship becomes a problem when the purpose is to estimate and predict risk as well as the profitability of investments. In the early 1990s, some researchers made an important contribution to modelling the interactions among stock markets. In more recent studies, Kotkatvuori-Örnberg, Nikkinen and Äijö (2013) analysed 50 stock markets, considering two major banking events, namely the acquisition of the investment bank Bear Stearns by the JP Morgan Chase group and the collapse of Lehman Brothers Holding Inc. The authors argue that conditional dynamic correlations increased significantly over the period 2007-2009, leading to volatility shocks between markets. Yarovaya, Brzeszczyński and Lau (2016) examined 10 developed markets and 11 emerging markets in Asia, America, Europe and Africa, from 2005 to 2014. The authors claim that markets are more susceptible to national volatility and region-specific shocks than those of interregional volatility. Given these results, and regarding the regional markets analysed, portfolio diversification could be a strategy for international investors.

Similarly, Ben Rejeb and Arfaoui (2016) studied the volatility between markets in Latin America, Asia and the US and Japan from 1993 to 13 October 2010. The authors show that volatility transmission is directly linked to the regional integration of markets, especially during the subprime crisis. The authors also suggest the existence of asymmetric integration between markets, especially between the regional markets of Asia and Latin America, which could promote effective diversification strategies. Todea (2016) examined the volatility and financial integration of 20 emerging markets during the period 1999-2013. The author shows that volatility is persistent and that this is related to the integration of financial markets. Specifically, this analysis indicates that the persistence of long memories is directly related to the financial crisis of 2008, especially after 2005, suggesting that portfolio diversification could be questioned. Güloğlu, Kaya and Aydemir (2016) analysed volatility among the five largest Latin American stock markets in the period of the 2008 financial crisis. The results suggest that market volatility is not consistent, and Brazil influences all sample markets, suggesting that diversification strategies are feasible. Similarly, Gamba-Santamaria, Gomez-Gonzalez, Hurtado-Guarin and Melo-Velandia (2017) analyzed the markets of Brazil, Chile, Colombia, Mexico and the US during the subprime financial crisis. The results show that Brazil is the largest market in Latin America and transmits volatility to its regional peers. The authors point out that the most critical period of risk transmission occurred in the years 2008-2012, increasing the difficulty of implementing efficient diversification strategies Cardona, Gutiérrez and Agudelo (2017) analysed the six largest markets in Latin America and the United States. The authors suggest that the US market transmitted volatility to Latin American markets, suggesting some precautions regarding risk diversification. Chuliá, Guillén and Uribe (2017) examined the 6 main markets in Latin America and the US market. The authors found reduced volatility between the US and Latin American stock markets, suggesting that portfolio diversification strategies may be feasible.

3. METHODOLOGY

In this study, the first step in econometric analysis is to evaluate the time series stationarity. This analysis becomes essential since such characteristics are fundamental for the data generator process modelling (Lütkepohl and Krätzig, 2004).

To study the short-term relationships between financial markets in the LAC Region, as well as the direction of influence between them, we will use the autoregressive vector (VAR) methodology developed by Sims (1980). The impulse-response functions (IRF) methodology, with Monte Carlo simulations, provides a dynamic analysis (variable over time), performed from the VAR model estimates, allowing to study the causal relationships found, even when not previously detected., causal relations to Granger between variables (Lütkepohl and Saikkonen 1997). Several studies, including Hassan and Malik (2007), Weber (2013), Kotkatvuori-Örnberg, Nikkinen and Äijö (2013), Yarovaya, Brzeszczyński and Lau (2016), Brzeszczyński and Lau (2016), Ben Rejeb and Boughrara (2015), and Corber et al. (2018) have focused on volatility behaviour, namely the stylized fact of volatility clusters.

The sum of the ARCH coefficients with the GARCH gives us a measure of the impact permanence of a shock on volatility, being called the persistence of the GARCH model. To describe the asymmetric behaviour in the volatility of most financial series, Nelson (1991) suggested the exponential GARCH model or EGARCH (Exponential Generalized Autoregressive Conditional Heteroskedasticity Model). Asymmetric behaviour in volatility motivated Zakoian (1994) and Glosten, Jagannathan, and Runkle (1993) to suggest the Threshold ARCH (TARCH) model, also called GJR-GARCH, as an alternative to the ARCH model. The model of dynamic condi-

tional correlation (DCC-GARCH), suggested by Engle (2002) and Tse and Tsui (2002), is distinguished from other models, such as the constant conditional correlation proposed by Bollerslev (1990) in that the conditional correlation matrix changes over time.

4. DATA DESCRIPTION

This paper aims to study the transmission of dynamic risk among the main stock markets in the LAC region, due to the subprime and European sovereign debt crises. Specifically, we intend to evaluate the volatility of price returns between the main regional markets of the LAC region, as well as the asymmetric effect. These emerging markets included LAN region (Latin American North) and LAS (Latin American South) markets, including the stock markets of Argentina, Brazil, Chile, Peru and Mexico. Data about index prices: opening, closing, maximum, and minimum daily prices of the various markets, were obtained from the DataStream platform, and all prices are in US dollars.

The volatilities of returns are daily and include the period between January 3, 2005 and April 30, 2012 (1911 observations). We chose to divide the sample into three sub-periods, one of pre-crisis, which we call the calm period corresponding to January 3, 2005 to July 31, 2007. The subprime crisis period is from August 1, 2007 to December 7, 2009; and the European sovereign debt crisis (SDC) period from December 8, 2009 to April 30, 2012.

Table 1. Main indices of Latin American markets

Index	Code.	City/Country
São Paulo Stock Exchange Index	BRA	São Paulo / Brazil
Buenos Aires Stock Exchange Merval Index	ARG	Buenos Aires / Argentina
Lima Stock Exchange General Index	PER	Lima / Peru
Santiago Stock Exchange IGPA Index	CHI	Santiago / Chile
Mexico Stock Market Index	MEX	Mexico City / Mexico

Note: Volatility measure of Rogers, Satchell e Yoon (1994).
DataStream: Base 100, 1911 observations.

5. RESULTS

In the presence of correlation between the volatility and, simultaneous, the occurrence of significant stock market losses, the relationship is defined by an asymmetric effect (or leverage effect). To analyse the asymmetric effect, we will estimate the EGARCH model (Exponential Generalized Autoregressive Conditional Heteroscedasticity) and TARCH (Threshold Autoregressive Conditional Heteroscedasticity) from volatility returns. The selection of the p and q parameters is based on the SBIC (Schwarz Bayesian information criterion).

When the asymmetric coefficient has a negative sign, positive shocks cause less volatility than negative shocks of a similar size. From analysis of the estimates of the EGARCH (1,1), it is suggested that all the coefficients show a negative sign, revealing the presence of an asymmetric effect. In addition, these coefficients were statistically different from zero except for the Peruvian market in the calm sub-period.

According the TARCH (1.1) model, performed on price volatility, the results suggest that all coefficients ϒ present a negative sign, identifying the presence of an asymmetric effect. In addition, these coefficients were statistically different from zero, except for the Peruvian market in the Calm sub-period, which is not significant.

The results of the Ljung-Box tests of the residuals of the EGARCH (1,1) and TARCH (1,1) models allow us to conclude for the non-rejection of the null hypothesis and, consequently, to accept the absence of correlation in the standardized residuals. These results were corroborated by the ARCH-LM test which suggests a bleaching of the residuals from the data series under analysis. To analyse shocks between Latin American regional markets, we used a VAR model based on the volatility measure of Rogers, Satchell and Yoon (1994). The optimal lag was selected based on the information criteria of AIC and SIC. With the lags determined by the information criteria, the residuals of the estimated VAR models evidence autocorrelation. In this sense, we increased the number of lags in order to correct that problem. Thus, the number of lags for each VAR was 4, 8 and 4 (for the three subperiods, respectively).

The Monte Carlo simulated impulse response (IRF) functions for the calm subperiod, calculated based on the autoregressive vector model, identified significant movements among some stock markets. Mexico is the market with the higher number of movements (22), causing the largest number of reactions in the Peruvian market (8 out of 10 possible). The Chile, Argentina, Brazil and Peru stock markets caused 21, 19, 18 and 17 shocks to their peers, respectively. Mexico is the market that receives more from its peers (26). The Argentina-Chile, Peru-Argentina, Peru-Brazil pairs do not show significant movements.

During the subperiod of the 2008 financial crisis, the relationships between the stock markets under study were generally significant. Mexico was the market with the most shocks from its regional peers (28), causing 8 shocks of 10 possible in the Peruvian market. The markets of Peru, Chile, Argentina and Brazil caused 21, 20, 16 and 15 shocks, respectively, in the remaining markets. In this period of severe crisis, the Mexican and Argentinean markets were the markets that absorbed the most shocks from their regional peers.

Like the previous two subperiods, there were significant reactions between the markets in this crisis period. Mexico was the market that caused the most reactions, namely 26, of which 10 in the Argentina stock market (10 out of 10 possible). Argentina caused 25 shocks in its regional peers, with a greater emphasis on the Mexican market (9 out of 10 possible). Additionally, the markets of Chile, Peru and Brazil generated 18, 15, and 9 shocks in their peers, respectively. Mexico and Argentina were the markets with the most shocks from their regional peers, 26 and 23, relatively. The Brazil-Peru, Chile-Peru, Peru-Brazil, Mexico-Peru pairs did not have significant movements.

The number of statistically significant shocks in the three subperiods was 97,100 and 97 respectively, reason for concluding that the financial crises of 2008 and 2010 did not increase the shocks between the main markets of Latin America in a significant way.

In order to analyse the links between the different markets and the possible occurrence of dynamic risk transmission between them, we used the DCC-GARCH model suggested by Engle (2002) and Tse and Tsui (2002). In addition, the estimated model shows that the relation is respected. This means that the method of generating stock market volatility is stable and allows us to conclude about the existence of persistence.

The results of the t homoscedastic test, for the dynamic risk transmission effect, between the calm sub-period and the subprime financial crisis. The results suggest the existence of 9 pairs rejecting the null hypothesis and identifying dynamic risk transmission between markets (in 20 possible

cases). However, in the remaining pairs the null was not rejected. These results corroborate that the Brazilian Stock Exchange is the largest market in Latin America and its shocks are transversal to the other markets in the LAC Region. Our results are in line with Gamba-Santamaria et al. (2017), Cardona et al. (2017), Güloğlu, Kaya and Aydemir (2016), who argue that the transmission of volatility was more intense during the financial crisis of 2008. The results of the t homoscedastic test, from the subprime to European sovereign debt crises point to the non-rejection of the null hypothesis. As suspected, volatility declines significantly in the main Latin American markets. Concluding, we can suggest that in the period 2010-2012 these markets tend towards equilibrium, allowing for portfolio diversification strategies. These remarks are corroborated by Güloğlu et al. (2016), Chuliá et al. (2017), Ben Rejeb and Arfaoui (2016) and Yarovaya, Brzeszczyński and Lau (2016).

6. CONCLUSION

In terms of a general conclusion, we can confirm higher levels of volatility during the sub-prime crisis period. However, when focusing on the sub period resulting from the European sovereign debt crisis, we find the level of volatility has dropped considerably. Considering this evidence, we consider there has been a readjustment in these regional markets from the year 2010, which may be a good sign for portfolio diversification strategies by international investors. As for future research, we consider it important to use intraday data, with the intention of improving the analysis of volatility. The inclusion of macroeconomic and financial variables would be important to explain the phenomenon of volatility transmission between markets, especially in emerging markets.

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DEVELOPMENT OF HIGH-TECH ENTREPRENEURSHIP ECOSYSTEM: CASE OF UNIVERSITY OF NOVI SAD

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Abstract: *High-tech entrepreneurship is one of the means by which new knowledge and technologies are converted into economic and social benefits. This paper presents bottom-up development of high-tech entrepreneurial ecosystem in transitional economy through the example of the city of Novi Sad, and the University of Novi Sad, Serbia. Entrepreneurial ecosystems are defined as sets of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship within a particular territory. Current scientific literature which examines high-tech startup ecosystems is underdeveloped. Most of the papers are focused on superficial generalizations based on successful case studies such as Silicon Valley and Boulder in USA, Tel Aviv in Israel, Berlin in Germany or Beijing in China, while neglecting the state of high-tech ecosystems in developing countries. In this paper the authors present the state of development of one such high-tech ecosystem, which is of great importance to Serbia.*

Keywords: *Startups, Transitional economy, High-tech entrepreneurial ecosystem.*

1. INTRODUCTION

In the last few decades we are witnessing importance of the research in the area of high-tech sectors and there are many studies which show that high-tech entrepreneurship is one of the vehicles by which scientific results are translated into economic benefits.

Another problem stems from the fact that most of the scientific work deals with small and medium-sized enterprises in general: „Policy references to entrepreneurship are typically equated with SMEs in general or even numbers of self-employed. Neither of which fully captures the totality and complexity of entrepreneurship." (Nepelski & Roy, 2017).

Contemporary literature emphasizes that current policy support does not sufficiently recognize the role of specifically high-tech entrepreneurship vs. low tech entrepreneurship.

Many of the studies have analyzed general conditions necessary for the development of entrepreneurship in general (Mason, Colin; Brown, 2014). Given the obvious difference between high-tech and low-tech entrepreneurship, there is a lack of analysis of the impact of the global environment and the necessary conditions for the successful operation of high-tech companies.

The main problem is the fact that most of the studies are devoted to research related to small and medium-sized enterprises in developed countries. There is a lack of analysis of the difficulties

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associated with SMEs in developing countries, and especially a lack of research on high-tech entrepreneurial ventures.

In the paper "Determinants of high-tech entrepreneurship in Europe" the authors mentioned that Europe was lagging behind in the ICT sector which was the driver of growth in the late 1990s in the US (Cincera & Veugelers, 2013).

The authors (Moncada-Paternò-Castello, 2016) emphasize that this pattern can be generalized to most emerging sectors in which European firms are unable to benefit from first mover advantages. To bridge this gap, it is necessary to develop a high-tech entrepreneurial ecosystem to support and facilitate the development of new high-tech firms in these emerging sectors. One of the basic resources for the development of high-tech entrepreneurship is domain knowledge in the field of ICT, and it is therefore natural that the high-tech entrepreneurship ecosystem develops around the universities that create that form of domain knowledge. In addition to this resource, it is necessary to provide other resources necessary for the development of high-tech ventures (Nepelski & Roy, 2017): Entrepreneurial culture, Entrepreneurial education, Intellectual property rights (IPR) protection, Market dynamics, Access to finance, Regulatory environment, Physical infrastructure.

Given that high-tech entrepreneurship is a generator of economic development in the knowledge economy, knowledge intensive organizations deserve the utmost attention when formulating public policies, in both developed and developing economies. Therefore, understanding the differences between the framework conditions for successful entrepreneurship and high-tech entrepreneurship is of great importance and is a challenge for scholars and policy makers.

It is necessary to define the specific barriers that hinder the development of new high tech firms, as they play a key role in improving competitiveness; "one of the greatest engines fostering economic growth in the global economy is high-tech industry" (Frenkel, 2012).

Dynamic regional economies like *Silicon Valley and Boulder in USA, Tel Aviv in Israel, Berlin in Germany or Beijing in China* were seen as evidence of the transformative effect that technology clusters can have on regional economies by accelerating the growth of technology startups.

Although it is widely accepted that the high-tech industry is the biggest driver of economic growth in the global economy and generator of dynamic regional economies and technological startups, there is still "a lack of research to identify the nature of high-tech firms which are often viewed as something of a "black box""(Brown & Mason, 2014).

The focus of this study is high-tech entrepreneurship ecosystem developed around University of Novi Sad.

The characteristic of such an ecosystem is that it is made up of more sophisticated, science-based firms whose R&D-based innovation support program is affiliated with universities, rather than most SMEs in traditional sectors with more ad hoc innovation processes (Brown & Mason, 2014; Tödtling, Lehner, & Kaufmann, 2009).

2. CASE STUDY REVIEW

University of Novi Sad was established in 1960. It currently has more than 50,000 students, 5,000 employees and more than 400 study programs. The largest faculty within the University of Novi Sad is the Faculty of Technical Sciences which has over 15,000 students and over 1,200 employees.

The Faculty of Technical Sciences is guided by the idea of the "Holy Trinity rule". This unwritten rule implies that faculty employees distribute their activities evenly according to the following formula: 1/3 teaching; 1/3 research; 1/3 industry cooperation. The rule has contributed to developing intensive cooperation with the economy, leading to the development of innovative solutions in response to industry needs. The newly created innovations also serve as a basis for improving the teaching process at the Faculty.

3. PHASES OF DEVELOPMENT OF THE ENTREPRENEURIAL ECOSYSTEM

Due to the economic sanctions imposed on Serbia in the 1990s, industrial companies approached the University to find new solutions for maintaining and upgrading industrial plants and overcoming the lack of spare parts.

During this period, 18 companies were founded (mostly by professors) at the University of Novi Sad, most of them spinoff companies of the Faculty of Technical Sciences.

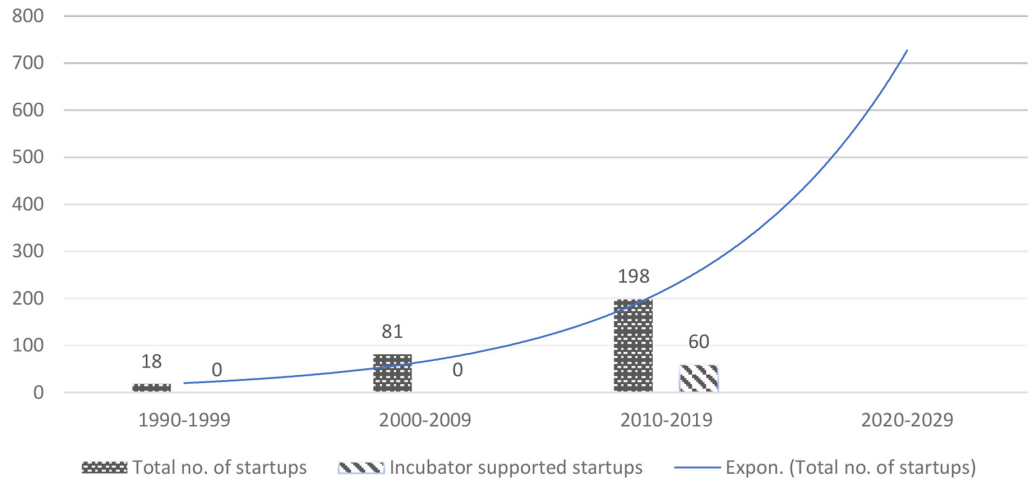

Figure 1 – Results of high-tech entrepreneurship ecosystem of University of Novi Sad – Number of startups per decade

Source: Authors based on publicly available information from Serbian Business Registers Agency

After the sanctions were lifted, new cooperation was established between former industry suppliers (before sanctions) from abroad, and professors who maintained industrial systems in the 1990s. Finding solutions and keeping companies afloat under sanctions required lots of improvisation and innovation. Companies from abroad recognized that quality.

In the 2000-2009 period, many of the Serbian industrial companies disappeared through the process of privatization, but the spin-offs continued to develop through the cooperation with international partners.

New spin-off companies in Phase II were mostly established by professors, researchers, and former employees of companies from Phase I (1990's). In the 2000-2009 period 63 new high-tech companies were established.

During the Phase III from 2010 to 2019 most of the industry from which the first generation of spin-off firms have evolved has disappeared, and new spin-off and startup firms continue to develop on the wave of cooperation with foreign partners, mostly based on outsourcing business model.

New firms are being founded by professors, assistants, and former employees of Phase II firms. Most of the companies are in the field of ICT and many are founded by professors from the Faculty of Technical Sciences. The Faculty of Technical Sciences has greatly contributed to the development of high-tech ecosystems by investing heavily in the development of new ICT study programs that have followed world trends and enabled this sector to develop by providing skilled professionals. During this phase of development, the Faculty of Technical Sciences participated in the establishment of the Business Incubator Novi Sad with the aim of institutionalizing support for the development of new high-tech startup companies. As a result of the activities in the Phase III of ecosystem development, a total of 117 new companies were established, of which 60 new startups were founded with the support of the Incubator (Figure 1).

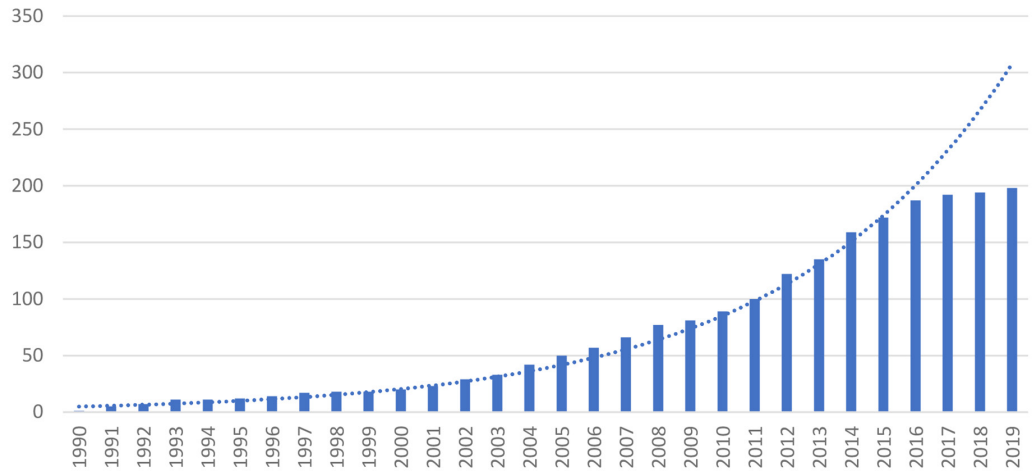

Figure 2 - Results of high-tech entrepreneurship ecosystem of University of Novi Sad – Total number of companies per year

Source: Authors based on publicly available information from Serbian Business Registers Agency

Figure 2 shows the total number of high-tech companies from 1990 to 2019. The picture shows the exponential growth of the number of high-tech companies until 2016. The stalled growth occurring in the period from 2016 can be linked to the capacity limits related to the number of enrolled students and graduates of ICT majors from the Faculty of Technical Sciences.

Figure 3 gives an overview of the total number of startups that were created with the direct support of the Business Incubator Novi Sad. Interestingly, an exponential upward trend can be observed here as well. The trend deviation in 2018 is due to the limited space capacities of the Business Incubator Novi Sad. This limitation will be alleviated with additional space for the Business Incubator Novi Sad within the new Science and Technology Park Novi Sad, which is scheduled to open in mid-2020.

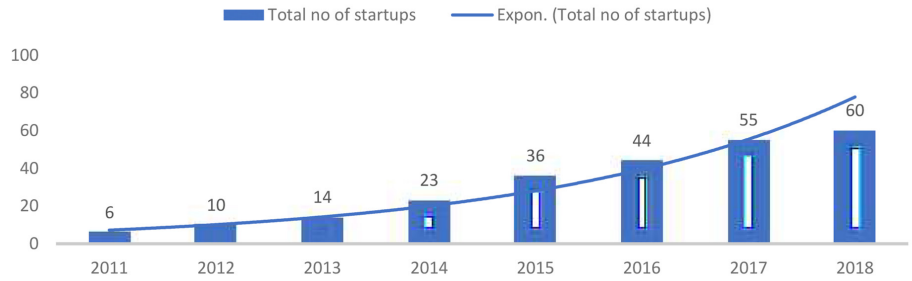

Figure 3 - Results of Business incubator Novi Sad – number of startups per year
Source: (Ćelić, Uzelac, Draskovic, Petrov, & Janjušić, 2019)

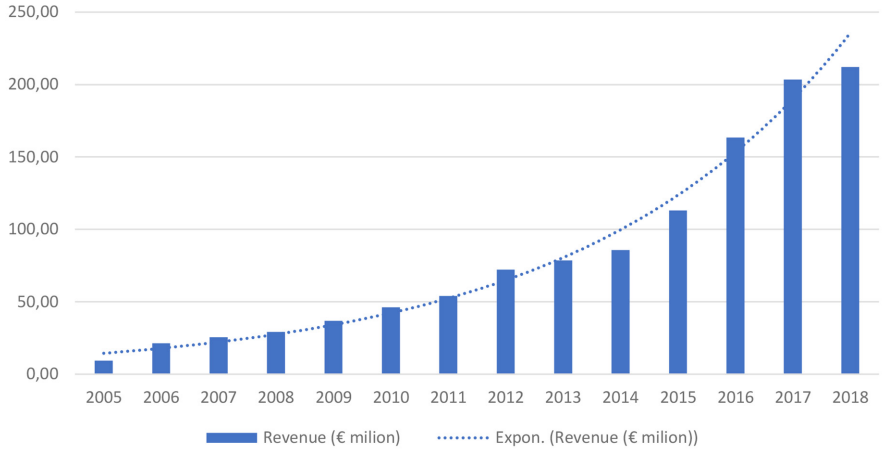

Figure 4 – Results of high-tech entrepreneurship ecosystem of University of Novi Sad – Total revenue
Source: Authors based on publicly available information from Serbian Business Registers Agency

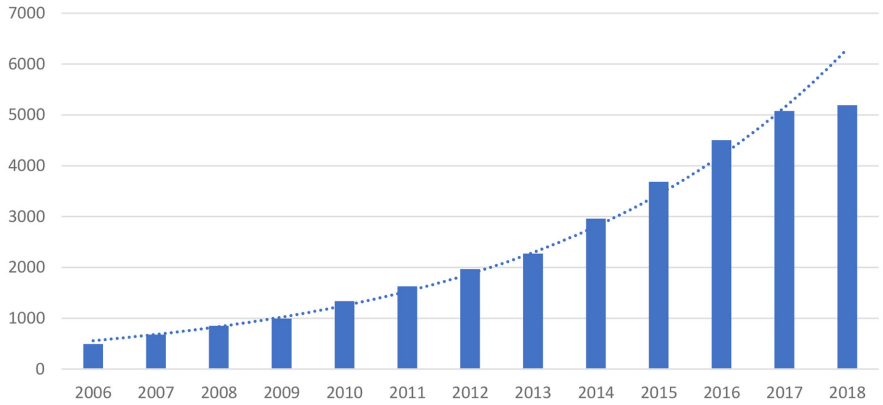

Figure 5 - Results of high-tech entrepreneurship ecosystem of University of Novi Sad – Total number of employees
Source: Authors based on publicly available information from Serbian Business Registers Agency

Figure 4 shows the total revenues of companies from high-tech ecosystem, and it can be observed that the revenue growth follows exponential trend.

Figure 5 shows the total number of employees of high-tech companies for the period 2006 to 2018, and it can be observed that the growth has an exponential trend until 2017. Deviation from the trend observed in 2018 can be linked to the limits in the number of students who are graduating from ICT majors at the University of Novi Sad.

4. CONCLUSION

Importance of the high-tech ecosystem that has grown around and with the help of the University of Novi Sad for the local and regional economy cannot be underestimated. It has greatly reduced the brain drain in the whole province of Vojvodina. Some of the high-tech companies that have sprouted from this ecosystem have become major economic forces not just on the local or regional stage, but on the global as well. The best example is the company DMS Novi Sad with over a thousand employees, most of them current and former students of Faculty of Technical Sciences. DMS Novi Sad has been founded by professors from the Faculty of Technical Sciences. It has recently been acquired by Schneider Electric (French multinational corporation), and is now known as Schneider Electric DMS NS LLC.

Figure 2 shows the slowdown in the exponential growth of the number of startups in the high-tech ecosystem of the University of Novi Sad, and Figure 5 shows the same trend when it comes to the total number of employees in the high-tech companies of this ecosystem. Both growth stunts are due, among other things, to the limits in the number of newly graduated ICT professionals due to the limited capacity of Faculty of Technical Sciences, the most significant institution that trains ICT professionals at the University of Novi Sad. Fortunately, Faculty of Technical Sciences, and Business Incubator Novi Sad will get significant additional space within the Science and Technology Park of Novi Sad in mid-2020. That is expected to significantly increase their educational and support capacities, and thus enable the trend of exponential growth of both high-tech companies and number of employees within the high-tech ecosystem of the University of Novi Sad to continue.

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WHO WANTS TO DO BUSINESS?

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Abstract: *Entrepreneurship is considered the main driving force of economic growth and innovation. Thus, it is important to monitor the interest of young people in starting a business. The aim of this paper is to find out which main variables influence starting of a business by university students. A decision tree (n=1168) was used to identify these variables. It was found that the type of university and gender play an important role. Students of the Faculty of Arts and Design, the Faculty of Social and Economic Studies and the Faculty of Mechanical Engineering want to start a business most frequently. It was also proved that men claim to be more interested in entrepreneurship than women. However, it is very interesting to find that there are no statistically significant gender differences between students that already have a business.*

Keywords: *Interest, Entrepreneurship, Factors which influence starting a business, Type of university, Gender.*

1. INTRODUCTION

Governments of individual countries encourage entrepreneurship because it brings extensive economic profit; it is a potential source of innovation, a driving force for economic growth, and it creates new jobs. From the perspective of young people, entrepreneurship is one of ways in which to assert oneself on the labour market. The willingness to do business is influenced by a number of factors. An extensive study was carried out by Belás, Ključnikov and Smrčka (2016) with the purpose of identifying the most important incentives for starting a business. In a sample of more than one thousand businesspersons they established that the most important incentives for people to start a business are financial incentives and a strong incentive appeared to be entrepreneurship as a mission. Some businesspersons state they started business because they had no other job. Apparently, entrepreneurship as an alternative for improving one´s labour market prospects is a realistic presumption. This incentive will apparently be more dominant in developing economies and in advanced countries in specific phases of the economic cycle when the economy slows down and employers do not wish to recruit new employees or even make them redundant. Other authors (such as Campin, Barraket, & Luke, 2013) also mention the fact that financial incentives do not play a primary role in starting a business. On the other hand, the conclusions of some studies identify economic factors as important factors, however, not the only ones. They are very closely linked to other incentives, such as self-efficacy, independence, personal ambitions and others (Hessels, Gelderen, Thurik, R., 2008; Chen, & Elston, 2013; Herring & Willie 2019).

The question is, how can education influence entrepreneurial intentions. Nabi et al. (2018) investigate whether entrepreneurial education subsequently influences entrepreneurial intentions. They conclude that the results are not clear or explicit. Entrepreneurial education may have a

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positive influence on the subsequent business plan; however, a negative influence has been established as well. The most positive influence appears to be entrepreneurship education in the first years of university education.

Raza and Irfan (2017) recommend that schools focus particularly on the development of students´ intentions, self-efficacy and motivators relating to the development of entrepreneurial intentions.

Some authors think that the decision to start a business is made by young people at the time prior to entering the labour market (Yildiz, 2018). Consequently, the objective of this research was to identify entrepreneurial intentions of university students and variables related to the intentions.

1. METHODOLOGY

To achieve the objective, a written questionnaire was used. The survey group consisted of students from all faculties of the Jan Evangelista Purkyně University in Ústí and Labem (Czech Republic). An overview of the faculties (including their abbreviations used in the text below) is shown in Table 1.

Table 1. Faculties included in the research

Abbreviation	Name of faculty
FSES	Faculty of Social and Economic Studies
FEd	Faculty of Education
FS	Faculty of Science
FHS	Faculty of Health Studies
FME	Faculty of Mechanical Engineering
FEnv	Faculty of the Environment
FA	Faculty of Arts
FAD	Faculty of Art and Design

Source: own

The size of the selection group at individual faculties was specified using the quota sampling in consideration of the number of involved students. The selection group consisted of 1168 students. The method applied was a written questionnaire. Students answered the question on whether they are planning to do business within 3 to 5 years after finishing education. Responses were marked on the Likert scale, with 1 meaning strongly agree, 2 agree, 3 disagree and 4 strongly disagree. Students already doing business could use mark 5.

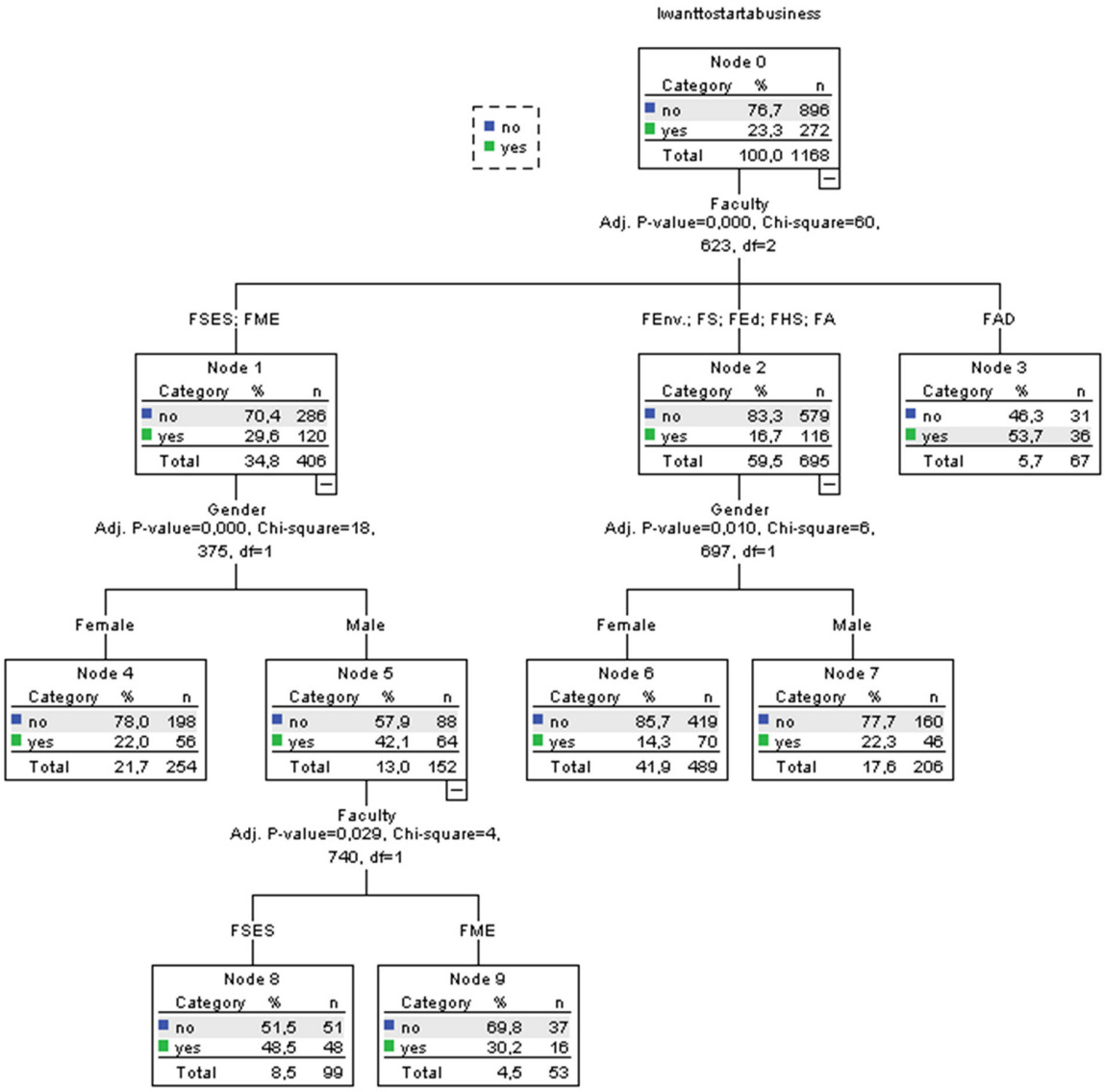
Two hypotheses were defined in the framework of the research:
Hypothesis One: planning to start a business is influenced by the type of university where a student study;
Hypothesis Two: men plan their own business more frequently than women.

MS Excel followed by SW Statistica and SPSS Statistics were used to evaluate the data. The statistical methods used for the research were the decision tree and two binomial distribution concordance parameter tests. The decision tree was used to establish what variables influence planning to start a business. The dependent variable was the variable "I want to start a business", grouped in two categories (Yes, No). The selected independent variables were: gender, mode of study (master's, bachelor), faculty and year of study.

3. RESULTS

The model in Figure 1 shows that the variables mode of study and year of study do not have any influence on the decision of whether a student plans or does not plan to go into business after finishing education.

Figure 1. Decision tree – identification of variables which have an influence on planning to start a business



Source: own

In this model, 77.1% of cases were well classified and the risk estimate was 22.9%. The variable which has the greatest influence on the interest in starting a business is the type of faculty a student currently studies at. The attitude of respondents from different faculties to the preference of being self-employed divided the model into three groups. The largest group was constituted of the group of faculties (FA, FS, FHS, FEnv and FEd). The group displays the largest number of those who are not going to start a business after finishing education (83 %). Only 16.7 % of students from the first group expressed a willingness to start a business after graduating. Students who declare an interest in entrepreneurship are rather men (22.3 %) than women (14.3 %).

The second group comprises two faculties (FSES and FME) with a slightly lower number of those who are not entrepreneurially oriented after university (70 %). 30% of students declare an interest in entrepreneurship in the second group. It comprises a higher number of men (42.1 %) than women (22 %) of those willing to go into business.

The third group contains the FAD, where more than 53 % of students consider starting a business after finishing education. It was established that gender has no influence on the decision to start a business after study in the students of this faculty.

It can be concluded from the foregoing findings that the formulated hypothesis:

H1: planning to start a business is influenced by the type of university where a student study was confirmed.

The second hypothesis presumed that men plan their own entrepreneurship more frequently than women. The findings stated above show that there are gender differences in the extent of intentions to start a business, not only among students of individual faculties, but also between genders at these faculties. Absolute frequencies are shown in Table 2.

Table 2. Who is interested in starting a business – gender differences

Are you going to start a business after leaving university?	**Female**	**Male**	**Total**
Strongly agree	22	20	42
Agree	115	90	205
Disagree	411	195	606
Strongly disagree	229	61	290
I already do business	16	9	25
Total	793	375	1168

Source: own

To establish whether there are statistically significant differences in the number of males and females who do not do business yet but consider doing business, the parameter concordance of two binomial distributions test was used. The established p-value was 0.0000. The concordance is rejected at 5% of the level of significance. This means that there is a statistically significantly higher number of men considering entrepreneurship than women.

Hypothesis "H2: men plan their own entrepreneurship more frequently than women" is therefore confirmed from the point of view of students not already doing business.

It was also looked into whether there are statistically significant gender differences between students who already do business (i.e., already during their studies). It was tested whether there are more men than women who already do business. The established p–value of 0.3378 shows that the concordance is not rejected at the 5% level of significance. The percentage of men who already do business is not statistically significantly different in comparison with the percentage of women who already do business.

Hypothesis "H2: men plan their own entrepreneurship more frequently than women" was not confirmed based on the consideration of only the data from students already doing business.

4. FUTURE RESEARCH DIRECTIONS

Many surveys look at identifying incentives which lead to starting a business (Kurniawan, 2019; Verdugo, 2018; Chen, 2017 and others). However, it is important how the survey group is defined, because there are significant differences depending on age (for example, financial motivation is more important for younger entrepreneurs) and the education of respondents (Belás, Ključnikov & Smrčka, 2016). The difference in education can be understood in terms of the educational level (secondary, university) but also in terms of the type of education (type of university). The results presented in this article apparently show that differences in intentions to go into business are actually influenced by the type of university currently studied at by the respondent. It would be appropriate to verify in further research whether the declared entrepreneurial intentions of students have subsequently been achieved. Such research would have to be of longitudinal character; however, its conclusions would be very valuable.

Gender differences in the attitude towards entrepreneurship is a rather disputable question. The causes of differences in gender participation in entrepreneurship were investigated by Acs et al. (2011), for example, who developed empirical studies presented at a conference organised by the Gender Equality for Development - World Bank Group and the Center for International Policy, University of Michigan, in June 2009, for example. Gender in the field of entrepreneurship has apparently been a topic for researchers for many years and these questions are still pertinent across continents (Le & Raven, 2015; Bui, Kuan & Chu, 2018). Belás, Ključnikov and Smrčka (2016) state that no differences were found in the intensity of incentives to go into business between genders. A number of studies come to the conclusion that gender influences entrepreneurial intentions (Molino et al., 2018; Perez-Quintana, 2017; Miranda et al., 2017; Francisco-Javier Caro-González, 2017). Gender differences in entrepreneurial self-efficacy are explained by cultural standards and stereotypes as well as other variables, such as supervisory experience, business process knowledge and educational level (Chowdhury, Endres & Frye, 2019).

It was established, just as in this survey, that men consider starting a business more frequently than women. However, the subsequent analysis revealed that conclusions in the area of gender differ. For respondents not doing business, gender differences are identified, but for respondents doing business, gender distinctions become blurred. The same conclusion was made by Camelo-Ordaz, Diánez-González and Ruiz-Navarro (2016). They found that there are gender differences in the extent of entrepreneurial intentions but only considering those not doing business. Such disparities vanish in businesspersons. These findings are of great importance for future research. The fact whether a respondent considers starting a business or he/she already is in business, significantly changes his/her attitudes. Presumably, and further research should verify this, whether a similar change is typical for incentives initiating starting a business and incentives which subsequently maintain the entrepreneurial activities.

5. CONCLUSION

This survey looked at identifying variables influencing the entrepreneurial intentions of university students. The investigation included gender, mode of study (master's, bachelor), faculty and year of study as variables. The greatest influence on the willingness to start a business of the specified variables is from the type of university attended by students. The greatest interest in doing business is declared by students in the artistic field and students of economy and technology. It was further investigated whether men plan to start a business more frequently than

women. The data obtained from a group of students not in business show gender differences, while the data processed from a group of students who already do business do not show such gender differences.

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ONLINE PLATFORMS AND THE STIMULATION OF CREATIVE ENTREPRENEURSHIP – THE ROLE OF CREATIVITY AND THE PERCEPTION ABOUT WORK AND SELF-EMPLOYMENT

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Abstract: *The purpose of this paper is to explore creativity in the context of online platforms, to analyze the profile of creative entrepreneurs, the sources of creativity, specific motivations, to identify the interests and aspects common to the entrepreneurs present on the online platforms, as well as the way in which creative entrepreneurship changes the perception about business, work and self-employment. For this study, we used qualitative data collected following the elaboration and administration of an interview consisting of a series of questions regarding: the entrepreneurial experience on the online platform, the accessibility of the online platform, the sources of creativity, the role of creativity in creating a new product, the motivation for starting the creative business, the perception about work and self-employment, etc. A number of 30 handmade product creators were interviewed who market their products on Etsy-type online platforms. After analyzing and interpreting the data, the main conclusion of the paper is that, the existence of online platforms, the relatively low level of technical skills required for their use, directly influences the initiation of creative businesses, facilitates the entry into the niche markets of newly created products, stimulating in this way the manifestation of creativity and the initiation of new businesses. Also, online platforms radically change the perception of work and self-employment in order to stimulate it.*

Keywords: *Creative entrepreneurship, Creative economy, On-line platforms, Creativity and business, On-line start-up entrepreneurship, Business profile.*

1. INTRODUCTION

Currently, much emphasis is placed on the transition from the industrial to the intellectual era. In particular, much attention is given to the development of the creative economy, which is based on intellectual activities, the generation of new knowledge, of design-thinking, creative imagination and creativity. The creative, imaginative potential becomes a major production resource. A key element of this type of economy is the category of people with creative thinking, capable of creating something new. The ability to enter the market with the results of creativity gives birth to the creative industry, the creation of creative business communities.

In this context, e-commerce platforms that support product creators are not a trend, but a necessity, because they facilitate remote interaction, everything that entails displaying and presenting the result of creativity, entering the market, presenting new products, stages of marketing and interaction with customers through virtual networks, etc.

This research presents an analysis of the creative sources and motivational sources of the creators behind the small online businesses that sell handmade products and personalized products. Our study provides information for researchers interested in examining how online microenterprises in niche markets are motivated to create and for decision makers who want to develop policies to support creative entrepreneurship.

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2. THEORETICAL BACKGROUND

Previous theoretical concerns have demonstrated the direct association between creativity and the initiation of new businesses (Sternberg, 1999; Lee et all, 2004; Florida, 2008). Sternberg (1999) defines creativity as the ability to produce new, unexpected, but also appropriate, useful new things. Sternberg and Lubart (1999) define entrepreneurship as a form of creativity and can be labeled as business or entrepreneurial creativity because most of the time new businesses are original and useful. Although it is a multidimensional concept, creativity is measured by the Bohemian Index (Florida, 2002), a method of quantifying the proportion of „bohemians" and other creative people from an artistic point of view in a region. The Bohemian Index measures the artistic creativity and intellectual dynamism of a region, the openness of a region to creativity not necessarily directly associated with technological and business innovations (Lee et all, 2004).

Stimulating entrepreneurship, especially creative entrepreneurship through online platforms, is currently a new resource for stimulating economic development. In the specialized literature, interdisciplinary concerns have begun to appear with common analysis points regarding the use of online platforms by creative companies, increasing the use of these platforms and stimulating creative entrepreneurship, the influence that these platforms have in displaying products and entering the niche markets of handmade creative products, the use of these platforms especially by women and the influence that creative products have on purchasing intentions, the vision on work in creative activities through self-employment, etc.

We consider relevant the concerns for: the analysis and creation of theoretical models of sales of micro-enterprises through online platforms, for the valorization of products that include creativity, that are made manually and customized, and that have higher prices and are aimed at niche segments of the market (Church and Oakley, 2018), concerns for the development and empirical testing of the components of a business model relevant to the online platforms used by creative companies, proposing a holistic business model, based on creativity and the complexity of the product portfolio (Chandna and Salimath, 2018), the significance of marketing handmade products on online platforms, such as Etsy, for predominantly female sellers and its emancipatory effects, analyzes its work and limitations on online platforms (Jourdain, 2018), studies that explore whether manual production versus machine affect the attractiveness of the product, the effect of handmade on purchase intentions is analyzed (Fuchs et al., 2015), the opportunities offered by the online platforms, such as Etsy, to those who have not previously had access to this, but also analyze the issues that undermine these opportunities, foreshadowing the competition on the online platforms of creative products (Close, 2016).

The present work is part of our previous research area on stimulating entrepreneurship, especially among young people and women (Dodescu and Pop-Cohuţ, 2018; Dodescu, Pop-Cohuţ, 2018; Dodescu and Pop-Cohuţ, 2015; Dodescu, Bădulescu and Pop-Cohuţ, 2012) and aims to analyze the profile of creative entrepreneurs, identifying specific motivational aspects, identifying common interests and aspects of entrepreneurs present on online platforms.

2. RESEARCH METHODOLOGY

As this research aims to analyze the profile of creative entrepreneurs, identifying specific motivational aspects, identifying common interests and aspects of entrepreneurs present on online platforms, as well as how creative entrepreneurship changes their perception about business,

work and self-employment, the method used was the semi-structured qualitative interview (in-depth interview). This method allows an in-depth understanding of both the specifics of each case and the elements common to all (Steinar, 2008). The interview guide was organized into four discussion topics to highlight the importance of creativity in entrepreneurship, motivations of creative entrepreneurship, perception of work and self-employment. **Topic 1** ***General information*** about the respondent: name, surname, age, level of education, company name and field of activity, how the activity began, business experience, how many years have they been active on the online platform. **Topic 2** ***Creativity and its sources***: sources of creativity, the role of creativity in creating a new product, the influence of time and flexible program in the act of creation, the influence of customer feedback in the act of creation. **Topic 3** ***The importance of the online platform in starting and running the business***: the accessibility of the online platform, the skills needed to use the online platform, the role of the online platform in ensuring the visibility of creative products, the impact of the online platform in promoting niche products, the role of the online platform in accessing a larger market and so increasing sales. **Topic 4** ***The impact of the existence of the online platform and shaping the perception of work and self-employment***: the motivation of starting a business with products that incorporate a high level of creativity, especially handmade products and if this motivation was influenced by P2P platforms, the existence of an online store on P2P platforms, the number of hours worked in creative fields and the decision regarding self-employment by starting an online business, the motivation to continue the online business and the motivation to recommend to other product creators the use of the online platform.

The sample was chosen by a sampling technique without probability, both by evaluation and by identification. The selection of the respondents targeted handmade product creators, creative entrepreneurs with a minimum experience of 3 years, the main selection criterion being the continuity of the activity on the online platform. In a first step, potential respondents were emailed the interview guide and then the meetings for the individual interviews were set. Out of a total of 75 potential respondents contacted online, 30 creators were interviewed, including 28 women and 2 men. Data collection was carried out between February and September 2019. For the analysis of the obtained answers we used the Statistical Package for the Social Sciences (SPSS) version 17.

This paper examines creativity and its sources, the role of creativity in creating a new product, the motivation of starting a creative business, the importance of the online platform in starting and running the online business and ensuring the visibility of the created products, as well as the impact of the existence of the online platform in the outlining of the perception of work and self-employment. Therefore, in our research we started from the following hypotheses:

Hypothesis One: There is a positive correlation between creativity manifested through the creation of products with a high degree of originality and creativity and the initiation of business in creative fields.

Hypothesis Two: There is a positive correlation between the existence of online platforms and the initiation of online businesses in creative fields.

3. RESULTS

From a total number of 30 respondents, 28 are women, aged 25 to 45 years old. All respondents have higher education and business experience of: less than 5 years - 30%, between 5 and 10 years – 43.3%, more than 10 years' experience – 26.7%. All respondents have online businesses

on an Etsy-type platform. None of these businesses operate in the classic format of shops or other forms of commerce. All respondents are also product creators, very few work in a team – 6.6%. The businesses operate in the following fields of activity: jewellery (12 businesses - 40%), clothing (4 businesses – 13.33%), interior design accessories (6 businesses – 20%), art (1 business – 3.33%), footwear and leather goods (2 businesses – 6.67%), ceramic objects (2 businesses – 6.67%), woodworking (2 businesses – 6.67%), winemaking (1 business – 3.33%). The main motivations for starting a business: freedom to create new products (26.7%), freedom of decision - independence 20%, the existence of the online platform 20%, online marketplace 16.7%, the created products have positive feedback 13.3%, financial independence (3.3%).

Regarding creativity and its sources, we asked creators to define creativity, which are the sources of their creativity, what is the role of creativity in creating a new product and whether there is a direct link between creativity and the flexibility of the working hours. The main words that define creativity were: colour, joy, well-being, naturalness, the desire to do something else, the desire to create something new, permanent concern for doing something, etc. *"Creativity is simply the process of turning a dream into a healthy dose of passion and endurance." (EI)*

The sources of creativity were defined, as follows: nature 33.3%, colours 16.7%, new materials 16.7%, surrounding objects 10%, travel 6.7%, beautiful things 6.7%, new ideas, flea markets, magazines – 3.3% each. "*Creativity is a natural thing! The mind relaxed and began to imagine the strangest and most unexpected objects of decoration: the forks came to life, the cups began to light, the wool dolls became waking lights, the hooks and pencils became lamps" (AD).* We observe some ease in defining the sources of creativity: nature, beautiful things, available materials etc., product ideas are created freely, unconstrained or not imposed by a boss, they develop naturally, through experimentation and constant concern for creation.

Defining the identity of their own products is done in terms of colour, light, joy, wellbeing. The product creators are very concerned about the originality and the degree of creativity included in the products offered to customers, they want the product to create emotion, unique experiences but also functionality, they are open to all things modern, to change and to experimentation, they are optimistic, courageous. They are realistic about the future course of the business; they know very clearly what motivates them and what future projects they have. A positive factor in the creation of new products is the positive feedback received from the customers as well as the constant source of new ideas that motivate them. "*Our clients are very attentive to the meanings of the objects, to every detail. They are aware of the difference between a handmade product and a series or factory product and appreciate the creative process. Thanks to them we feel the joy of creating, because without this feedback the enthusiasm is lost. No one creates just for themselves." (IR).*

If we were to make a general characterization of the profile of handmade product creators, it would be: higher education not necessarily in the field in which they show their creativity, from the urban environment; they have a creative background stretching back to childhood, they are concerned with creating something new, they have shown their creativity in a period of time when they re-thought their lives, changed their priorities or simply had more free time, for example during maternity leave/childcare leave; they are very hard-working, conscientious and dedicated people, they care constantly improving their working techniques, they are open to learning, they love the freedom of expression, they appreciate the quality and not the quantity of things, they are people who love beauty, who emanate simplicity, naturalness. "*This year was a year of study and discovery. I learned about myself that I actually like to learn! I learned that*

challenges stimulate me and that I do not shy away from new projects that I know nothing about. I have recently completed a series of courses in interior design and responsible design". (IM)

Regarding the importance of the online platform in starting and running the business, product creators say the online platform is: very accessible - 70%, accessible – 26.6%, average accessibility – 3.3%. The use of the platform does not require technical skills other than the basic ones when using a computer: very low technical skills 50%, low technical skills 20%, average technical skills 6.7%, high technical skills 16.7% and very high technical skills 6.7%. The pre-formatting of online stores, the description of the steps in uploading and the pre-formatted product presentation structure, as well as the requirements regarding the image of the uploaded products ensure the uniformity of the presentation of the products present in the online stores on the platform and ensure the visibility of the creative products. The online platform plays an important role in promoting niche products, personalized products and those that incorporate a high level of novelty and creativity: to a great extent 60%, to quite a big extent 16.7%, to a medium extent 3.3%, to a small extent 10%, to a very small extent 10%.

Regarding the impact of the existence of the online platform and shaping the perception of work and self-employment, the product creators say that the existence of the online platform was essential in the presence on the online market of their products, and therefore their income. Most of them tried selling their products in classic format through trade fairs, but the impact of marketing the products, of the visibility, the access to the advised consumers was very small. The opening of the online store has greatly increased the visibility of the niche products created, they have managed to sell their products and reach the target consumer. The sale of the created products and therefore the purpose of the creative act motivates and excites them and this is the basis of new ideas and projects. This motivational aspect caused them to rethink their work time, sometimes make radical career decisions, some gave up their main job which they had obtained after years of education and qualifications, and have chosen this path after going through many searches, experiments etc. Self-employment was a viable option to all respondents. *"Three years ago, I did not think that from a person working a corporate job, dedicated to the company, someone who worked without having a strict schedule, trying to be at home at least as much as to my family to recognize me, I will end up developing my own business."* (AD)

Also, we cannot neglect the impact of online business on the lives of entrepreneurs, both in terms of working time and lifestyle. The analysis of the interviews reveals that starting an online business in the creative field has a major impact on the working time, the time spent on product creation, its presentation, etc. Working time is no longer perceived as working time, it increases the degree of involvement in work, in the creative process, in product innovation, in improving the working technique, in finding technical solutions, it is perceived as quality time. "*Time goes by without me getting bored, without too many breaks, but at the end of the day there is a pleasant tiredness because another day has ended – another day when I have done a lot and I can tell a nice story about it."*(PM) Although most respondents see *freedom* as essential in their creative endeavour, these entrepreneurs allocate a higher than average number of hours to work and are, thus, "*tired, but smiling*". Thus, 50% work between 8 and 10 hours per day, 30% work about 8 hours per day, 13.3% work between 6 and 8 hours per day and 6.7% work between 4 and 6 hours per day. This business opportunity has also led to changes in the attitude about self: the level of confidence, personal satisfaction, pride and self-esteem increases, they are more independent, they gain job satisfaction and especially satisfaction regarding the products created by them.

The positive experience gained through the platform determines them to become promoters of creative entrepreneurship, to recommend the initiation of new businesses to other product creators: the flexible program, the positive experiences, the desire to be their own boss, the freedom to do things in their personal style, the possibility to use their skills and competences to the full capacity, professional satisfaction, financial independence, responsibility, decision-making, personal and professional development.

3.1. Association, correlation and regression of variables

The independent variables for this study are: ***Creativity*** (C, in what follows – with a number of 5 questions), ***the existence of P2P online platforms*** (**PON,** in what follows - with a number of 5 questions) and the dependent variable is ***starting online businesses in creative fields*** (**IAC,** in what follows **–** with a number of 7 questions).

Creativity includes the answers regarding the field of activity, the sources of creativity, the role of creativity in the creation of new products, the influence of the flexible work time in expressing creativity, the number of hours worked per day. ***The existence of P2P online platforms*** describes the accessibility of the online platform, the skills needed to use the online platform, the role of the online platform in ensuring the visibility of creative products, the impact of the online platform in promoting niche products, the role of the online platform in accessing a larger market and thus increased sales. ***Starting online businesses in creative fields*** describes the motivation of starting a business with products that include a high level of creativity, especially handmade products and, if this motivation was influenced by P2P platforms, the existence of an online store on P2P platforms, the decision regarding self-employment by initiating of an online business, the motivation to continue the online business and the motivation to recommend to other product creators to use the online platform.

With the help of the computer software Statistical Package for the Social Sciences (SPSS) for the three categories of factors that characterize C, PON and IAC, the variables were aggregated, by the *method of associating variables with T-Test analysis.* Following verification of the correlation between the aggregated variables using Pearson's Chi-square for pairs C - IAC (Sig value = 0.685) and PON – IAC (Sig value = 0.291) the significant connection between creativity and business start-up in creative fields was confirmed, as well as between the existence of online platforms and business start-up in creative fields. In both cases, a significantly higher correlation is observed than the statistical threshold (statistical threshold Sig > 0.05 shows a significant approximation between variables). To see the relationship between the independent variable C and the dependent variable IAC, we used the Pearson correlation and regression analysis: R=0.377, R Square 0.142, Sig. (2-tailed).=0.00 and for the independent variable PON and the dependent variable IAC, namely: R=0.534, R Square = 0.285; Sig. (2-tailed).=0.00, and the correlation coefficient is statistically significant for both pairs, it is $p < 0.05$.

As can be seen from the results, we can state that **Hypothesis One:** ***There is a positive correlation between creativity manifested through the creation of products with a high degree of originality and creativity and the initiation of business in creative fields – is valid*** (R=0.377, $p<0.05$), there is a positive correlation but not a very close one. Not all product creators have the courage to start a business, the vast majority prefer to market these products in classic style, for example through trade fairs. Also, even though an impressive number of creators use P2P platforms to market their products, the vast majority do not start an online business. Also,

Hypothesis Two: ***There is a positive correlation between the existence of online platforms and the initiation of online businesses in creative fields – is valid*** (R=0.534. P<0.05), there is a good positive correlation. Currently, the development of online platforms and the ease of use are a decisive factor in the decision to open an online store. The fact that they do not require additional technical skills, the preformatting of online stores and the way of presenting products facilitates the visibility and online presence of products created on the global market.

4. FUTURE RESEARCH DIRECTIONS

We consider that the topic of this paper, namely the impact of the existence of online platforms on the development of businesses in areas that include a high level of creativity, is insufficiently studied. Although these platforms allow entrepreneurs to set up online businesses with ease, the business models on these platforms are not yet studied in depth. The fact that only a part of the participants in the transactions on these platforms have started an online business and that a good part of the participants are natural persons who occasionally sell products made by them does not allow to know exactly the economic and financial impact of these transactions. Although this online business model is aimed at handmade products, with a high degree of creativity and proposes a high price strategy, we consider the perception of consumers about these products interesting. These consumers are shifting from mass production and production in series to personalized, original products. Also, we consider it attractive to continue the research that will strengthen our understanding of the implications of e-commerce in consumer behavior, of strategies to support creativity, including by stimulating creative entrepreneurship.

5. CONCLUSION

Although online platforms are already more than 10 years old and allow entrepreneurs to set up online businesses with relative ease, business models and support for product creators remain an area that is under-analyzed. In this paper we have tried to highlight the fact that the existence and development of these virtual platforms contribute to the highlighting of the original products, which include manual work, characterized by creativity and originality and thus can lead to the growth of the creative economy.

We consider that at the level of analysis achieved, we have reached the objectives set: on the one hand, to identify if there is a positive correlation between the time available, the sources of creativity and the manifestation of creativity by making products with a high degree of originality and creativity and, on the other hand, if there is a positive correlation between the existence of online platforms and the initiation of online business in creative fields. However, we must admit that our study has limitations, especially related to the sample size and its relevance to the number of users of the online platform, the fact that we interviewed only experienced product creators who already have an online business in the creative field, as well as the fact that everyone has opted for self-employment, so we can consider them as business models and promoters of online businesses among product creators. The results obtained can help new conceptualizations of creative economies, the role of virtual platforms in capitalizing on creativity and starting new businesses, in knowing the creative behavior, including the perception of work and creativity in the context of self-employment.

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SECURITY ASPECTS OF WASTE DISPOSAL

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Abstract: *Waste disposal is one of the main issues of today's world in terms of environmental protection, sustainable development and economic growth. One of the less researched subjects is the security aspect of waste disposal and management. This topic includes environmental, political, and economic aspects. This paper examines the approaches to waste disposal in regard of hazardous waste management and disposal, nuclear waste management and disposal, etc. and their impact on complex issues of national, regional, and global security, and possible conflict generation. The paper includes the analysis of the interviews with security and waste management experts in the Republic of Serbia and United Arab Emirates and presents a model for the approach to waste management and disposal that includes the security aspect.*

Keywords: *Waste management, the Republic of Serbia, United Arab Emirates.*

1. INTRODUCTION

During the last two decades, the question of waste disposal and its consequences on economy and environment is starting to be in the focus of academic and professional researchers, as well as governmental agencies and private companies. Nevertheless, one of the aspects of waste disposal is often neglected; it is the security aspect (Fischhendler, Katz & Feitelson, 2016) that encompasses environmental, economic, and political aspects, too.

Even though there is not enough research, existing studies on this topic have included the issues of solid waste management (Bezergianni, Dimitriadis, Faussone & Karonis, 2017), medical waste management (Awodele, Adewoye, & Oparah, 2016), disaster management (Mohnkern, 2019), various hazardous waste management (Gómez-Delgado & Tarantola, 2006), cross-border security (Fischhendler, Katz & Feitelson, 2016; Happ & Bruns, 2017), E-waste (Mitra & Mitra, 2018), nuclear waste management (Kermisch, 2016), water and water infrastructure security (Ostfeld & Salomons, 2004; Baer & Gerlak, 2015), and even military forces security management regarding the waste management (Bosetti & Bridges, 2009).

This paper aims to examine the approaches to waste disposal in regard of hazardous waste management and disposal, nuclear waste management and disposal, etc. and their impact on complex issues of national, regional, and global security, and possible conflict generation. The paper includes the analysis of the interviews with security and waste management experts in the Republic of Serbia and United Arab Emirates and presents a model for the approach to waste management and disposal that includes the security aspect.

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2. SECURITY ASPECTS OF WASTE DISPOSAL - LITERATURE REVIEW

Environmental security and national security are recognized by many countries during the last thirty years, one of the first countries that included environmental issues in national security was US in 1991 (Funke, 2011). European Union defines the waste as "any substance or object which holder (manufacturer) gets rid of, intends to get rid of or to which he is required to get rid of" (Nowacki, 2020). Organization for Security and Cooperation in Europe for the beginning of 21st century has put more focus on the issues of environmental security, stability of the countries and the possibilities of conflict generation (OEBS, 2015). Inadequate waste disposal and management can cause not only a threat to human health but generate social and political conflicts on both inter-national and intra-national levels.

2.1. Solid waste management

Solid waste also lately plays significant role in security strategies because some types of waste like plastic waste, which comprises from 10 to 12 per cent of solid waste (Bezergianni, Dimitriadis, Faussone & Karonis, 2017), can cause chemical accidents in case of fire, etc. Solid waste dumping sites cause major concern in certain parts of Russia for example (Sverdyukov, 2014), and illegal dumping sites are concerned as main issue in African countries (Fazzo, Minichilli, Santoro, Ceccarini, Della Seta, Bianchi, Comba & Martuzzi, 2017). Even in developed countries, there is a question of security risks of solid waste dumps on the urban areas in their vicinity (Fazzo et al. 2017). Some of the countries that have heavy industry close to densely populated areas, such as Israel, tend to give more focus on regulation that provides complying with the higher waste management standards, nevertheless due to geographical and political problems, wider cooperation is often impossible (Alleson, Levin, Brenner & Al Hmaidi, 2013).

2.2. Hazardous waste disposal

World Health Organization treats hazardous waste and its disposal as one of top environmental issues (Fazzo et al. 2017). Hazardous waste has many definitions and one of the most applicable is the one from the US Environmental Protection Agency that states the following:

Simply defined, a hazardous waste is a waste with properties that make it dangerous or c a - pable of having a harmful effect on human health or the environment. Hazardous waste is generated from many sources, ranging from industrial manufacturing process wastes to batteries and may come in many forms, including liquids, solids gases, and sludges. (n.d.).

Hazardous waste is differentiated from other solid waste as the one that contains substances or has characteristics that might make it harmful to human health or the environment. Hazardous waste includes the waste that derives from standard production processes (various solvents), the wastes deriving from petroleum refineries and pesticide industries, wastewaters, various sludges, discarded or not used chemical products, mercury containing products, etc. In many countries, especially in Asia, there is a growing concern over illegal hazardous waste disposal sites, where also many criminal activities (money laundering, hazardous waste smuggling, etc.) are connected to hazardous waste illegal disposal (White, 2016).

Hazardous and non-hazardous waste is prone to accidents and there are professional and scientific efforts to develop secure techniques of waste identification and treatment in the potential accidents or disaster scenarios (Kiss Leizer & Tokody, 2017).

2.3. Nuclear waste disposal

Nuclear waste can be considered as a type of hazardous waste. Nuclear disasters in Chernobyl in 1986 and Fukushima in 2011 have also raised the concern on the impact of nuclear waste on human health and environment. The greatest security concerns are storing used nuclear fuel and possibilities of use of weapon grade plutonium (Taebi & Kloosterman, 2008). One of the issues in the focus of scientists is the strategic security aspect of short term and long-term possible incidents in regard to nuclear waste disposal (Kermisch, 2016).

2.4. Medical waste disposal

During the last decade, there is increased awareness of the problems associated with medical waste disposal (Awodele, Adewoye, & Oparah, 2016), and the initiatives and programs for safe medical waste disposal, because of serious consequences on public health in case of inadequate medical waste disposal and treatment.

2.5. E-waste disposal

During the last decade e-waste is the highest rising type of waste (Martin & Harris, 2017). E-waste often comprises of various hazardous materials: lead, mercury, chromium, same as different chemicals in plastic parts. Asian countries are especially threatened by the growing amount of e-waste and illegal e-waste disposal and illegal "recycling" (Cui, 2013; White, 2016; Fazzo et al. 2017) that cause major security risks. Nevertheless, this is more complex issue, because many poor countries actually serve as e-waste dumping ground for developed countries like USA and Japan (Monika, 2010).

2.6. Wastewater

Netherlands, for example, face the problem of wastewater disposal, amid the climate changes effects and increasing risk of floods (Markus, & Savini, 2016). The example of situation on Palestinian-Israeli border shows the challenges of wastewater disposal as a major security issue, because water resources have long been in the focus of security strategists, but the disposal and treatment of wastewater hasn't (Alleson, Levin, Brenner & Al Hmaidi, 2013; Fischhendler, Katz & Feitelson, 2016). This issue is important also in the countries prone to natural disasters like earthquakes such are New Zealand, California in the US, British Columbia in Canada, etc. (Mohnkern, 2019). The issue of precedence of security over sustainability remains one of the open questions for scientists, politicians, and the inhabitants of the volatile areas alike (Fischhendler, Katz & Feitelson, 2016).

2.7. Cross-border cooperation

Some of the issues of waste disposal and management are often settled in the programs of cross border cooperation, like the issues between Ukraine and Belarus that are collaborate through EU funded programs. But even those programs are influenced by different policies of waste categorizations, as they are in both countries inherited form Soviet times and EU proposes new classification, policies and procedures (Happ & Bruns, 2017). Waste management (Alleson, Levin, Brenner & Al Hmaidi, 2013) initiatives exist in conflict prone regions, but the implementation of those initiatives, especially in the long-term basis remains one of the, currently, often unsolvable problems.

3. MATERIALS AND METHODS

3.1. Objectives and survey design

The objective of the empirical part of the research is to examine the approach to waste management in the Republic of Serbia and United Arab Emirates, as countries with different geographical location and economic development status. The series of interviews has been organized in Belgrade, Serbia and Dubai, United Arab Emirates from September 16, to November 8, 2019 through in-person and online structured interviews. The participants have been chosen from academics in the fields of security, law, economics, environmental studies, disaster management, and waste management, same as the professionals from the matching areas. The academics and experts have been given one open question regarding security aspects of waste management, to identify main security problems regarding the waste disposal in their respective countries and overall.

3.2. Description of the sample

Eighteen academics and experts in the fields of security, law, economics, environmental studies or protection, disaster management, and waste management have been interviewed, eleven from Serbia and seven from United Arab Emirates. From Serbia, the participants have included: one academic from interdisciplinary field (security, economics, and environmental engineering), two academics from the field of security studies, one from the field of economics and one form environmental studies. Experts from Serbia have included: two security experts, one environmental expert, one waste management expert, one disaster management expert, and one expert from the legal field. The interviewees from United Arab Emirates have included three academics from the field of security studies, one from the legal field, two experts from waste management studies and one environmental expert. Demographical profile of the participants is given at Table 1.

Table 1. Demographic variables

Code Name	Country	Position	Experience (years)
P1	Serbia	Security expert	>20
P2	Serbia	Environmental expert	11-15
P3	Serbia	Academic (security)	<5
P4	Serbia	Academic (economics)	11-15
P5	Serbia	Academic (environment)	6-10
P6	Serbia	Security expert	6-10
P7	Serbia	Disaster management expert	11-15
P8	Serbia	Waste management expert	11-15
P9	Serbia	Academic (interdisciplinary)	11-15
P10	UAE	Academic (security)	6-10
P11	UAE	Academic (security)	11-15
P12	UAE	Academic (security)	>20
P13	UAE	Expert (waste management)	>20
P14	UAE	Environmental expert	11-15
P15	UAE	Expert (waste management)	11-15
P16	UAE	Academic (law)	11-15
P17	Serbia	Academic (engineering management)	6-10
P18	Serbia	Expert (law)	11-15

4. RESULTS AND DISCUSSION

Academic researchers and experts from Serbia (P1, P3, P9, and P18) agreed that the current regulative is mostly in lieu with European Union laws; nevertheless, they noted the implementation of existing laws regarding waste management as a crucial problem for the future security strategies that would include environmental aspects. Environmental researchers and experts from both countries emphasise the lack of education as the key threat for implementing future waste management programs same as political frictions on national, regional and international levels.

Academics and experts in Serbia (P17, P6, and P2) noted the necessity for understanding the role of emerging new technologies in identifying waste disposal problems (illegal waste sites, etc.) in developing countries. One academic (P17) suggested the great potential of using drones to identify illegal waste disposal sites. The participants form UAE (P10, P11, P12, and P12) emphasised that in UAE new technological solutions are already implemented, but that there is not enough awareness of the security threats that e-waste and, especially hazardous waste pose to the countries and regions and the possibilities of conflict generation in the future regarding the water safety and provision for all.

Academics and experts from UAE (P10, P13, P14, and P15) have stated the success of the programs implemented in order to reach the goal of reducing the quantity of waste discarded into landfills to zero and converting solid waste into energy by using innovations and new technologies that can be implemented not only in various countries with similar economic development and similar geography, but in many developing countries too.

Academics from both countries (P3, P4, P5, P10, P11, and P12) emphasized the importance of using academics' and experts' opinions based on robust research in developing any waste disposal strategies in regard to security aspect. Also, academics and experts (P1, P2, P7, P8, P13, P14, and P15) from both countries, agreed on the financial concerns that may cause a serious problem, especially for developing countries, as many of the potential waste management programs require vast financial funds that are unattainable for developing countries.

Table 2. Major waste disposal concerns

Regulative implementation	Financial support
Illegal dumping sites	Non usage of experts' opinions
Education of citizens	Not enough awareness se of the new technologies impact
Hazardous waste accumulation	E-waste accumulation

Source: Authors based on interviews

Based on the results of the interviews, the authors propose a model for waste disposal management that can be implemented in developed countries such as United Arab Emirates, and developing countries such as Serbia.

The first action is developing waste management procedures that would derive from existent and future regulative (which could be called as *Action zero*) on national and international level that would tackle waste disposal issues in terms of various kinds of waste. The second step would be developing of waste management procedures based on national and international legislation that would be developed on the level of local communities, companies, and other organizations. The third stage would be education of public servants, companies, various organizations, and

entire population, especially youth on the importance on developing waste management programs that will ensure future generations with the foundation of the waste management system that takes into the account security issues. This activity needs to be implemented with serious effort in order to avoid popular trends not based on scientific results and to keep away from any political bias.

The fourth segment would be implementation of security policies and procedures in regard of environmental security that would provide for national, regional and international security and monitoring of those policies by academic and professional experts in the field in order to propose potential corrective steps. Almost simultaneously, the cooperation phase would insure exchange the data and successful examples between the countries with similar geographical and economic situation and developing of joint waste management ventures. And the last phase would be the evaluation of the whole process in order to develop potential new legislation and policies, same as educational programs.

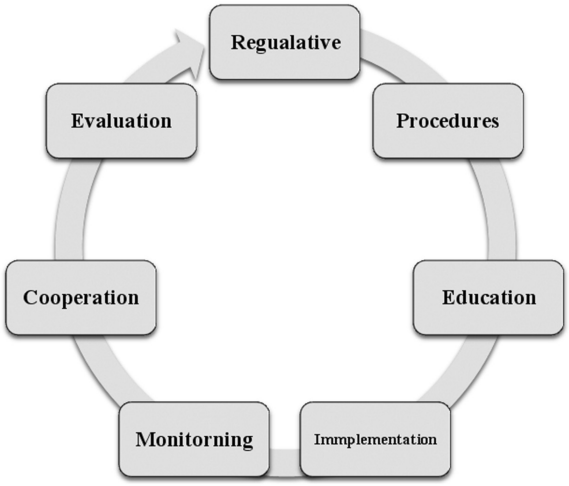

Figure 1. Proposed model of waste management cycle
Source: Authors

5. FUTURE RESEARCH DIRECTIONS

This study has limitations in terms of methodology and scope of data. For the future research ore extensive research could include specific issues, in depth surveys and using statistical methods in analysing collected data from various countries.

6. CONCLUSION

This paper examined literature on the approaches to waste disposal in regard of hazardous waste management and disposal, nuclear waste management and disposal, etc. and their impact on complex issues of national, regional, and global security, and possible conflict generation. The paper has included analysis of the interviews with security and waste management experts in the Republic of Serbia and United Arab Emirates and presented a model for the approach to waste management and disposal that includes the security aspect. This model encompasses regulative and its implementation, education, monitoring of activities, with the emphasis on intersectional and regional and wider cooperation, same as the evaluation of the whole cycle and corrective steps.

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E-WASTE CHALLENGES OF DEVELOPING COUNTRIES

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Abstract: *In recent years, increasing amount of e-waste has been a threat not only to public health but also for the environment. The problems regarding this multipart issue in developing world are raising community awareness and invest in infrastructure. The focus of this study is assessment of applied integrated approach toward electronic waste management and sustainability within organisations and to investigate if there is an environmental case for linking e-waste management with sustainable development goals regarding pollution control.*

The objectives of the article include the presentation of the current situation and the pace of sustainable development in e-waste management, which is one of the major problems of modern civilization. The social aspect is dominant sustainability factor in achieving balance between health and environmental issues. The importance of social factor reflects in the level of public awareness and knowledge in this field. The obtained results clearly indicate that developing countries lack the sustainable e-waste management and social initiatives, thus releasing harmful substances into environment. Also, as a result of this research there are several targets to strive for concerning EWM in developing world: (1) to connect the community and signify the importance of saving the environment; (2) to provide environmental education workshops for adults and teenagers. (3) to give attention that trash is valuable resource (4) to practice the concept of „reduce, reuse, and recycle" regard decreasing health risk.

Keywords: *Developing countries, E-waste, Recycling.*

1. INTRODUCTION

As the result of advance in technology, certain technological solutions become obsolete very fast after leaving the production facilities. This causes the production of electronic devices in the world to increase continuously. However, the increased demand for electronic goods is greatly influenced by other factors. This is primarily related to changes in the lifestyle of the population and to some extent to the growth of purchasing power. The problem of electronic waste is largely affecting developing countries. In those countries there is a growing problem of e-waste processing. This fact is influenced by insufficiently developed awareness of its harmful effects on the environment, as well as the fact that the procedures for proper storage of the e-waste and its processing are in conflict with the amount of waste generated in those countries. The aim of this paper is to highlight the specific problems facing developing countries, as well as to identify possible ways in which the problems identified can be addressed. Several targets have been proposed to improve the situation with the present e-waste management problem.

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2. LITERATURE REVIEW

2.1. E-waste as a health risk

E-waste contains numerous hazardous materials: lead, mercury, and chromium, certain chemicals in plastics, and brominated flame retardants. The most worrying is the fact that some naturally occurring substances which we use in the manufacture of electronic equipment, become dangerous when they go through the production process. It should be noted that they are completely harmless in their natural appearance (Okunola Alabi & Adekunle Bakare, 2017). On the other hand, processing of one tonne of e-waste results in a quantity of about 40 kg of material in the form of fine dust containing metals that are otherwise toxic in their original form (Gupta, Laul & Syal, 2008). E-waste accounts for 0.1 to 3% of total waste on the planet, however, it should be noted that e-waste is the fastest growing waste category on the planet, which can cause many problems in the future (Martin & Harris, 2017). The worrying fact is that product life cycle of electronic good is now reduced to three years period of time after initial purchase. People tend to change their electronical equipment more often and huge number of electronic devices will become unwanted at some point in their existence. That fact leads to the 8 percent annual growth rate in filed the e-waste industry (Martin & Harris, 2017). According to Pinto (2008), electronic equipment is classified into three categories: white goods (mostly household appliances), brown goods (cameras, camcorders, etc.) and ultimately grey goods, which are essentially the most complex for recycling because they contain a large amount of potentially harmful substances (scanners, printers, computers, etc.).

All those hazardous materials pose a significant risk to our environment through soil and water contamination, air pollution, soil and water contamination. They present significant danger to human health and wildlife. Dioxins and furans from poly vinyl chloride cause reproductive and developmental problems and pose great threat to immune system. They can be found in plastic which is used for bodies of electronical equipment. Lead causes damage to central and peripheral nervous systems, blood systems and kidneys. Lead can be found in television or monitors screens, and in various circuit board components. Mercury poses a serious threat to the brain, respiratory system and skin. It worth to mention that Mercury can be found in various types of batteries, inside flatpanel displays, which means that there is no rule that flat panels are completely hazard free compared to cathode ray tube screens. Cadmium causes massive neural damage, while Beryllium causes chronic beryllium disease and its inhalation could result in lung cancer. Cadmium can be found in plastics, plated steel, and inside TV vacuum tubes. Beryllium is present in circuit boards and in microprocessors. Exposure to Polybrominated diphenyl ethers (PBDEs) increases the chance of getting a malignant tumour and greatly affects the normal functioning of the thyroid gland. PBDEs are used as flame retardants, but also, they can be found in products such as cell phones, TVs or personal computer and laptops (Annamalai, 2015). In addition to the harmful substances that were essentially true to electrical devices, they also contain large amounts of personal information that use unblemished tuning and can be easily misused. Nearly 70% of data that is tampered with is taken from electrical devices with memory being disposed of improperly. So, apart from the damage done to the environment, there is a problem of misuse of private data (Martin & Harris, 2017).

2.2. E-waste and developing countries

Electronic waste has emerged as one of the most important issues of waste management and environmental concern, and pose a great threat to the environment due to the large volume of production of goods falling into that category of waste, as well as many other factors that charac-

terize each country individually. The problem of electronic waste is particularly pronounced in underdeveloped and developing countries. There are many reasons for this, but in the focus will be only some of the most important. Due to lack of financial resources, developing countries are putting little effort into e-waste treatment plants. In addition, developing countries in conjunction with other factors, become a kind of landfill for this type of waste for developed countries. Namely, the worn-out and outdated technique that falls into the category of electronic waste, instead of being disposed of and properly treated, ends up on the black market where it is sold as second-hand goods. Not only developing countries are unable to cope with the electronic waste that they generate, but also, they have to cope with the waste that accumulates in the form of used electronic equipment. For example, it is worth pointing out that approximately 50-80% of the electrical waste collected in the US ends up through various channels in China, India, Pakistan, and Taiwan, as well as in countries on the African continent, more specifically in developing countries (Monika, 2010). The US, Japan and the European Union are the leading exporters of e-waste and in 2010 they exported almost 4.49 million tonnes, and it should be emphasized that India alone stores 44% of e-waste more than it generates (Sthiannopkao & Wong, 2013). If one considers the fact that developing countries are prevented from dramatically improving their health care system, and here we are primarily thinking about the prevention and early detection of diseases that can be fatal to humans, the situation becomes quite alarming. There is a widespread trend in developing countries that very little attention is paid to develop awareness of both the harmfulness of electronic waste and the mobilization of the entire community to become more actively involved in the process of collection and treatment of electronic waste.

It seems somewhat contradictory to impose on some societies the imperative that they should actively advocate for the spread of awareness about the harmfulness of electronic waste, while keeping the broader population living below the subsistence level. Saying "The one man garbage saying, is another man treasure", can be viewed in two ways: in developed and developing countries. In developed countries, thanks to the awareness of the need for environmental protection and sustainable development, they are largely transforming their electronic waste into some kind of treasure. When it comes to developing countries, the aforementioned maxim makes sense, but takes on a rather different connotation. For example, a technologically overrun TV set that can be viewed as a good candidate by developed country residents for something that is considered as a sustainable development, is in the same time a perfectly correct electronic device for an individual in an undeveloped country that meets one's needs. It is also important to note that by the year 2030, nearly 400-700 million computers will be discarded in developing countries, which is roughly twice as much as in developed countries (Garlapati, 2016).

3. KEY TARGETS TO DEAL WITH EWM IN DEVELOPING WORLD

This research proposes four step model for addressing the challenges of Electronic waste in developing countries.

The first step in addressing the challenges posed by electronic waste would be to establish contacts with the community to emphasize the importance of the need to preserve the environment. If representatives of government bodies and organizations promoting the need for environmental protection succeed in reaching the broadest population, it is a very challenging task for the same community to receive the necessary attention and convince them of the importance of protecting the environment. There are different approaches through which this specific goal can be achieved. It is necessary to provide as much information as possible using the media

or through direct contact with the community by organizing the distribution of brochures and pamphlets highlighting the need for environmental protection. It is extremely important to pay close attention to the youngest generations. Lessons learned in early childhood become an integral part of human education. Basically, only when this step is fulfilled and some kind of attention in the community is created, the conditions for more active work with adults and teenage population can be created.

The second step, a very significant phase, would involve the creation of environmental educational workshops designed for teenage population and the adults. These workshops would consist courses and lectures that might seem to be interesting to the younger population. In these workshops, teens can learn how they can do useful things like electronic robots or other gadgets from electronic waste. So-called waste recycling events can also be organized where adults and teenagers can collect items such as: cell phones, laptops, computer monitors, TVs, PC, printers, cartridges for printers, all kinds of computer cables or cords, MP3 players, DVD players, and household appliances like fans, vacuum cleaners, cooktops, dishwashers, microwaves, ovens, stoves, refrigerators, freezers, and other household hazardous waste. As for adults, it must be emphasized how important it is to properly treat e-waste and remind them that it is a debt they have towards their children and future generations. Workshops designed for adults and teens will definitely take different forms, but they will share a common commitment to protect the environment.

The third step would be the fact that it is very important to send a clear and unambiguous message that e-waste is actually a very valuable resource that is not given enough attention. Thanks to e-waste processing, we come into possession of very valuable materials such as iron, aluminium, copper, gold, silver and other precious metals (Heacock et al., 2016). It should be noted that the purity of gold obtained by processing e-waste is 80% higher than that found in natural form. Nearly 7% of the world's gold reserves are „trapped" in electronic waste (TCE, 2016). It is worth noting that some developing countries do not have developed facilities for the treatment of waste, but efforts can be made that to at least e-waste actively collect, as well as to properly remove it from illegal landfills, playgrounds and other sites which are not intended for storage.

The fourth step would be to act to embody the concept of „reduce, reuse, and recycle" with respect to reducing health risk. Reduce, reuse and recycle are the main principles of waste management (Papa, 2015).

The first principle implies that essentially the population would have to spend less to generate less e-waste. The vast majority of users are in the habit of replacing their mobile phones with a newer model after a relatively short period of time, even though the old one was in perfectly good condition. With the development of technology, devices are becoming faster, they have advanced features, but these technological leaps certainly do not happen e.g. once a year. So, obviously, this is not about the need for more modern technology to make a job easier or more efficient, but about the need to follow fashion trends and where, say, mobile phones become a status symbol. The troubling fact is that this phenomenon is particularly noticeable in the younger generation

The second principle is reuse. The essence of reusing is in finding ways to reuse electronic goods and not to dismiss them as unusable. This can be shown in the following example. Every two years, a new generation of computer processors emerges, bringing with it a new socket on

the motherboard. If your configuration is correct and if you are a passionate video game fan, it is more than enough to replace the graphics card to give you the full experience of playing new titles. It is certainly unnecessary to change a complete computer. The average life of a computer used for business purposes is 3 to 5 years. After this time period, there may be problems with the software and hardware on computer after this time has elapsed. Also, there is a possibility that the configuration is not able to support modern programs. In such a situation, if the company is forced to retrieve computer technology, it would be beneficial to donate the used equipment to a school or non-profit organization (Sarokin, 2019). When we speak about personal computers, there is a tendency that if there is a malfunctioning part of the computer (for example, power supply), the whole computer is considered defective instead of just replacing a specific component. The reasons for this situation are reflected in the fact that users are not able to replace the component that failed on the computer themselves, as well as the fact that the repair services are extremely expensive. It is often a more tempting option for users to write off some of their computer equipment than to service it and extend its life span.

If your device, more specifically, an electronic device cannot be reused, it is very important that it is recycled properly. It is very important to highlight the fact that it is necessary to organize e-waste collection actions, especially among the younger population. Work must be done with large technical goods retail chains to install counters for disposal of used electronic equipment that cannot be used or donated as part of their sales facilities. The use of resources generated by recycling greatly reduces the need for resources available in nature. In this case, the amount of energy required for processing e-waste is far less than the energy required to obtain those same resources, for example during excavation in mining shafts (Yang et al. 2020). It should be borne in mind that recycling techniques must be constantly improved and that due care must be taken to protect the employees of those facilities. There are numerous examples where poor working conditions and outdated technology in recycling facilities have threatened the health of not only employees, but also their family members (Ceballos & Dong, 2016).

4. FUTURE RESEARCH DIRECTIONS

Future research will focus on specific practices that can be used to more efficiently collect and recycle e-waste in developing countries. Particular attention will be paid to educational institutions and how young generations can be educated about the benefits of recycling e-waste to society. The essence of a successful fight for the conservation of the environment lies in raising awareness of the threat posed to the human species by the dangers of e-waste. An example of Japan should be cited. Thanks to good recycling legal solutions, nearly 74% of e-waste goes to recycling plants, while at the same time in the US this percentage is 12.5% (Sthiannopkao & Wong, 2013).

5. CONCLUSION

As shown in this paper, developing countries face many challenges when it comes to dealing with e-waste management. In the face of such challenges, developing countries can follow good practices of developed countries and, in accordance with their specificities, modify the ways in which these problems can be addressed. In addition to the legal procedure, the four-step model discussed in this paper can be very effective in solving problems of electronic waste management in developing countries. It is not necessary to cultivate the illusion that the situation will change radically fast. Electronic devices will continue to be manufactured, but it is up to us to

dispose of and recycle them properly when discontinued. This model is especially important when considering the fact that over time, developing countries generate more electronic waste, both from their own sources and through imports from developed countries. With a responsible approach, developing countries can significantly raise the level of recycling of electronic waste with the prospect of reaching the maximum possible level in the near future.

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THE CHALLENGES OF ACHIEVING SMART, SUSTAINABLE AND INCLUSIVE GROWTH IN BULGARIA

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Abstract: *In the early 21st Century, when the Lisbon Strategy is passed, strategic planning in Europe experiences dynamic development. A new strategic document titled Europe 2020 is passed in 2010. Its goal is to make the European Union smart, sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion. The document has outlined eight measurable headline targets. Following its entry into the EU in 2007, Bulgaria is also expected to fulfil the requirements of the Europe 2020 strategy and achieve the specific targets that have been set. The main purpose of the paper is to identify Bulgaria's progress towards achieving the targets set at European level, and to outline the primary problems the country faces in the process of achieving said targets. The main conclusion is that despite its progress regarding some of the headline targets, Bulgaria has yet to achieve smart, sustainable and inclusive growth.*

Keywords: *Headline targets, Strategy implementation, European Union.*

1. INTRODUCTION

The development of strategic planning is given a strong push in the late 20th Century, when leaders of the EU's member states ascertain the fact that European economy is showing an increasingly noticeable lag, compared to its main competitors on the global stage. In order to overcome these lags, in March 2000, the Lisbon European Council passes the Strategy for Economic and Social Renovation of Europe (The Lisbon Strategy). The main objective of the document is for the European Union to become the most competitive and dynamic, knowledge-based, economy in the world, capable of stable economic development with more and better jobs, and larger social cohesion (European Parliament, 2000).

In spite of the set main objective in the Lisbon Strategy, as of 2010 „comparing the EU27 with a selected group of major global competitors shows that the US, Japan and South Korea have a performance lead over the EU27" (Innovation Union Scoreboard 2011, 2012, p.9). Moreover, the distance in development with countries such as China and India is gradually shortening. Similar conclusions can be made for labor markets where „relative to comparable advanced economies, many European countries exhibit low rates of employment and high rates of unemployment" (Baldwin, Wyplosz, 2012, p.233). In a report entitled Facing the challenge „the weak links between the Lisbon Strategy and the other EU strategies or tools, lack of commitment and political will, necessity of more coherence consistency in implementation, lack of engagement of national governments and citizens in implementation, necessity for vigorous communications" (High Level Group, 2004, p.39) are cited as reasons for the failure of the Lisbon Strategy.

In order to achieve the desired future development, the Europe 2020 Strategy for Intelligent, Stable and Inclusive Growth is passed on March 3 2010. Eight measurable headline targets have been outlined to measure the EU's progress along the road to achieving the strategy's priorities.

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To ensure that each Member State tailors the Europe 2020 strategy to its particular situation, the EU goals are translated into national targets. The headline targets are focusing on: employment, the size of expenses for research and development (R&D), greenhouse gas emissions, share of renewable energy sources in final energy consumption, energy efficiency, early school leavers, reached levels of tertiary education, people who live below the national poverty lines.

One of the major criticisms aimed at the Lisbon strategy is that the „EU-level targets were too numerous and did not sufficiently reflect differences in starting positions between the Member States" (European Commission, 2010, p.6). The introduction of the eight headline targets at the starting point gives the possibility for the leaders and policymakers of the European Union to keep track and analyse the transition of the Union as a whole and the member states towards achieving smart, sustainable and inclusive growth. This is considered as an attempt to overcome the above-mentioned criticism.

2. RESULTS OF THE IMPLEMENTATION OF THE EUROPE 2020 STRATEGY IN BULGARIA

Following its accession into the EU in 2007, Bulgaria is also expected to fulfill the requirements of the Europe 2020 strategy and achieve the specific goals outlined in it. At present, the country has managed to cover three of the eight headline targets of the Europe 2020 strategy, whereas most of the other targets show tendencies of improvement in the values of indicators. Education holds a significant position in the strategy, with two headline targets outlined for it. The first target involves early leavers from education and training, calculated as a percentage of the population aged 18-24, which should be lower than 11% in Bulgaria. This is among the headline targets that have not shown improvement. According to the data from Eurostat (2019) in 2010 the indicator's value is 12,6%, growing to 12,7% in 2017. Moreover, the 2011-2016 period shows a tendency of constant growth for the indicator's values. In addition to that since 2013 Bulgaria has worst percentage for the early school leavers in comparison with the European Union as a whole. At the end of 2017 fourteen countries managed to achieve their set national target.

The second headline target in the field of education involves the percentage of the population aged 30-34 who have successfully completed tertiary studies. In accordance with what is outlined, this share should reach 36% in Bulgaria. During the 2010-2017 period the share of tertiary education graduates has risen from 28% to 32,8%. Despite the clear positive trend observed in the indicator's values, several negative facts are present. In 2017 there are just four countries with lower level of tertiary educational attainment for the age group 30-34 years. They are Hungary 32,1%, Croatia 28,7%, Italy 26,9% and Romania 26,3%. In addition to that in 2017 fifteen countries have already reached their national targets concerning tertiary education.

According to the data from QS World University Rankings (2019), no Bulgarian universities have managed to rank among the top universities in the world. When it comes to discussing education, the most important question concerns quality. Drucker states that „in most knowledge work, quality is not a minimum and a restraint. Quality is the essence of the output" (Drucker, 1999, p. 143). In this field it is appropriate to judge the quality of education not by the number of graduated students but by the number of students who emerge on the labor market and possess knowledge and skills that fulfil the requirements of knowledge economy. At this stage, Bulgaria has yet to make the necessary transition from quantity to quality.

Table 1. Implementation of Bulgarian headline targets for Europe 2020 strategy (2010-2017 period)

Headline targets	2010	2011	2012	2013	2014	2015	2016	2017	Target
Employment rate, age group 20-64, %	64.7	62.9	63.0	63.5	65.1	67.1	67.7	71.3	76.0
Gross domestic expenditure on R&D, % of GDP	0.56	0.53	0.60	0.64	0.79	0.96	0.78	0.75	1.50
Greenhouse gas emissions, base year 1990	59.53	64.70	59.74	54.59	57.56	60.68	58.23	60.53	80.00
Share of renewable energy in gross final energy consumption, %	14.07	14.29	16.05	18.95	18.04	18.21	18.81	18.73	16.00
Primary energy consumption, Million TOE	17.41	18.58	17.86	16.50	17.27	17.97	17.68	18.33	16.90
Early leavers from education and training, % of the population aged 18-24	12.60	11.80	12.50	12.50	12.90	13.40	13.80	12.70	11.00
Tertiary educational attainment, age group 30-34	28.0	27.3	26.9	29.4	30.9	32.1	33.8	32.8	36.0
People of risk of poverty or social exclusion, Cumulative difference from 2008, in thousands	298	272	200	72	-512	-439	-531	-654	-260

Source: Eurostat

Another headline target in the strategy concerns R&D. In accordance with what is outlined, R&D expenditures in Bulgaria should make up 1,5% of the gross domestic product (GDP) by 2020. At first glance, there seems to be a positive trend when it comes to the indicator's values. In 2010 R&D costs in Bulgaria are 0,56%, reaching 0,75% in 2017. The data makes it clear that at this stage Bulgaria is still a long way from reaching the set target, which is unlikely to happen if the current trends remain unchanged. Moreover, the indicator's values have been declining over the past three years – in 2015 R&D costs make up 0,96% of the GDP, dropping to 0,78% in 2016, and finally reaching 0,75% in 2017. In addition to the above-mentioned facts, there are only four countries in European Union which in 2017 have low level of gross domestic expenditure on research and development as a percent of GDP. They are Cyprus with 0.56%, Malta 0.54%, Latvia 0.51% and Romania 0.50%.

In terms of headline targets, the issue of environmental protection is the most strongly advocated one in the Europe 2020 strategy, with three of the aforementioned targets dedicated to it. According to what is outlined in the strategy, greenhouse gas emissions should be 80% in comparison to emissions in 1990, which is one of the three headline targets that Bulgaria has so far managed to reach. By 2017 greenhouse gas emissions are 60,53% compared to emissions in 1990. In terms of this indicator, Bulgaria ranks sixth in the EU, only falling behind Lithuania, Latvia, Romania, Estonia and Slovakia. Although the set target has been reached, no serious progress has been recorded for greenhouse gas emissions since the strategy's realization was put into motion, which is substantiated by the fact that in 2010 the indicator reads a value of 59,53%, meaning that the studied period shows a rise in greenhouse gas emissions. The achievement of the set goal in Bulgaria is due in no small part to the decline of industrial production, observed in the years following the transition toward market economy.

Another headline target dedicated to environmental protection requires that Bulgaria's share of renewable energy in final energy consumption reach 16%. Said goal is achieved in 2012, with the indi-

cator's values currently reaching 18,73%. Only Croatia, Estonia and Hungary have managed to fulfil the aforementioned requirements regarding renewable energy in final energy consumption faster than Bulgaria. Investments in renewable energy sources made immediately after 2010 with the purpose of quickly reaching this headline target also bring about some unfavorable consequences.

The first one is related with the fact that the prices of solar technologies are constantly falling during the second decade of XXI century. In a report entitled Renewable power generation costs in 2018 is written that „the global weighted-average levelised cost of electricity of the newer solar and wind power technologies – concentrating solar power, utility-scale solar photovoltaics, onshore and offshore wind have all fallen between 2010 and 2018" (IRENA, 2019, p. 11). The significant investments in Bulgaria made immediately after 2010 led to drastic rise in electric energy prices for households and industry alike as a result of the higher prices of the solar technologies at that time. This resulted in social discontent aimed at the country's government.

The second unfavorable consequence results from the fact that over time technology involving renewable energy develops and becomes more effective. According to the report entitled Future of solar photovoltaic „the evolution of the solar PV industry so far has been remarkable, with several milestones achieved in recent years in terms of installations (including off-grid), cost reductions and technological advancements" (IRENA, 2019, p. 19). The constant improvement in the renewable energy technology could mean that at the end of the period for the realization of the Europe 2020 strategy Bulgaria will have achieved the goal, but at the cost of obsolete technology purchased at high prices.

The third headline target in the field of environmental protection requires that primary energy consumption in Bulgaria be lower than 16,9 million tons of oil equivalent (MTOE). In terms of this goal, there has been a decline in results. In 2010, primary energy consumption in Bulgaria is 17,41 MTOE, reaching 18,33 MTOE in 2017. For the 2010-2017 period Bulgaria is one of the six countries which have declined in results. In 2017 twelve countries have so far managed to reach the target.

On European level, there are positive trends in the achievement of the headline targets concerning environmental protection. The European Union has already made significant progress over the past decade not only in terms of climate change mitigation and reducing greenhouse gas emissions but also in other areas, such as tackling water pollution and reducing the plastic waste. Despite the positive trends in environmental protection, the European Union has been criticized multiple times for not setting higher goals for itself when it comes to climate. The European environment state and outlook 2020 report states that „despite the success of EU environmental policies, the outlook for Europe's environment is discouraging" (European Environment Agency, 2019, p.11). In the report is also written that against Europe`s long-term vision and complementary policy targets, it is clear that Europe is not making enough progress in addressing environmental challenges.

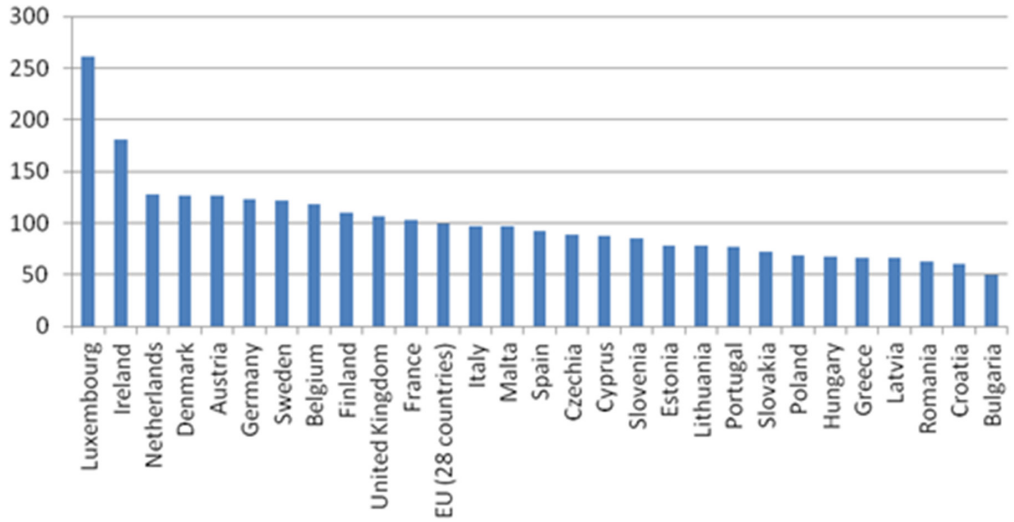
The necessity for more ambitious goals is also confirmed by the Paris Agreement regarding climate change. As a result of the Paris Agreement, the European Union sets the following targets which are to be achieved by 2030: at least 40% reduction of greenhouse gas emissions compared to levels from 1990; at least 32% share of renewable energy in final energy consumption; improving energy efficiency by 32.5%. Additionally, in order to keep global warming under 1.5 degrees (the target set by the UN) the European Commission presented its vision for prosperous, modern, competitive and climate-neutral economy by 2050.

The European 2030 headline targets are twice as demanding as the current national targets for Bulgaria. The European push to speed up actions to put European Union on track to meet its medium and long-term environmental policy goals and targets will urge Bulgarian leaders and policymakers to stimulate significant additional investments for achieving sustainable development of the country.

The final two headline targets in the Europe 2020 strategy concern employment and risk of poverty. In accordance with what is outlined, the employment rate among people in the 20-64 age group in Bulgaria should reach 76%. In terms of this goal, the indicator's values have shown a positive trend of growing. In 2010 the level of employment in Bulgaria is 64,7%, reaching 71,3% in 2017. However, despite the country's efforts to increase the level of employment, the indicator's value is still far from reaching the one set in the strategy. Although the national target for Bulgaria is higher than the target for the European Union as a whole (75%), for the entire period 2010-2017 the indicator's value in the Union is higher than the value for Bulgaria. Additionally, in some cases employment is stimulated purely for employment's sake. Bulgaria needs to make a transition toward stimulating employment that will result in accomplishing the goals of the Europe 2020 strategy – namely, achieving intelligent, stable and inclusive growth.

The final headline target of the Europe 2020 strategy requires that the population in risk of poverty or social exclusion be reduced by 260 000 people, as a cumulative difference from 2008, which is the third headline target which is achieved in Bulgaria. In 2017, the population in risk of poverty or social exclusion has dropped by 654 000 people. Tanushev states that „at the time of its admission to the EU Bulgaria was permanently the poorest country in the community" (Tanushev, 2012, p. 15). Despite the decrease of the population in risk of poverty or social exclusion Bulgaria is still presented as the poorest country in the EU.

Figure 1. Gross domestic product per capita in purchasing power standards for 2017, index (EU28=100)



Source: Eurostat

In 2017, Bulgaria is the last country in European Union concerning the indicator gross domestic product (GDP) per capita in purchasing power standards. In addition to that, the value of the indicator is half as much as the average for the European Union as a whole. In relation to GDP

per capita Bulgaria is far behind the newest member of the European Union - Croatia and far behind the country with which became a full member of the European Union - Romania. In order to overcome the fact that the country is still the poorest country in the Union, systematic efforts will have to be made to improve living standards for the population in Bulgaria.

3. CONCLUSION

With the adoption of the Europe 2020 strategy, Bulgaria has begun the process of achieving the national goals outlined in it. At present, the country has managed to cover three of the eight headline targets of the Europe 2020 strategy. They are related with the level of greenhouse gas emissions, the share of renewable energy in gross final energy consumption and the people at risk of poverty or social exclusion. Three of the other targets have shown tendencies of improvement regarding the values of indicators: employment rate in age group 20-64 years, gross domestic expenditure on R&D and tertiary educational attainment for age group 30-34.

Despite the overall indicated positive trends, there are a number of negative inferences. There are headline targets which show no advancement towards the desired state, i.e. early leavers from education and training and primary energy consumption. The European policy regarding environment protection will exert higher pressure on Bulgarian economy in the future which will demand significant additional investments for achieving sustainable development of the country. Despite the achievement of the headline target concerning decrease in the number of populations in risk of poverty or social exclusion, Bulgaria can still be presented as the poorest member of the European Union. Efforts which involve improving the quality of higher education, stimulating R&D, creating stable jobs and improving the population's living standards are still insufficient on a national level. The main conclusion of the paper is that despite its progress regarding some of the headline targets, Bulgaria has yet to achieve smart, sustainable and inclusive growth.

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MODEL FOR CADASTER OF HOUSING FACILITIES AS G2G SOLUTION FOR BETTER E-GOVERNMENT

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Abstract: *The implementation of the e-Government concept in the states worldwide has introduced significant changes in improving the functioning of the front office and the re-engineering of the existing back office. Even though the usage of ICT in public administration performance primarily was devised with the purpose of and focused on the re-engineering of the current services, in the developing countries, it instigated engineering of information systems in other areas as well, where the need for that emerged. The paper at hand focuses on the engineering of information system in the housing area. The research discusses the mapping of all the stakeholders in the housing area, the final aim being to create a role model institution in the public sector – Cadaster of Housing Facilities (CHF). The function of the new institution is to set up a data base which will include all the data related to the housing facilities and which will be of service to the rest of the institutions in the private and public sector which might need those data. The idea about this G2G solution is creating on-line public services by introducing a fundamental thinking of the way government departments and agencies work in the housing area.*

Keywords: *Cadaster of Housing Facilities, e-Government, G2G, Mapping stakeholders.*

1. INTRODUCTION

The information and communication technologies (ICT) are regarded as the main instigator of the changes that occurred at the beginning of the new millennium. The emergence of these technologies has found application in each and every segment of human life and has made a significant contribution not only to the manner in which people function, conduct business, but also in the manner in which states function as systems.

The use of ICT in the public sector has been dubbed e- Government. "E-government is a process of introducing information and communication technologies (ICT) in the public sector for the purpose of creating a flawless, responsive, and citizen-focused government by transforming the process of delivering on-line public services and by introducing a fundamental re-thinking of the way government departments and agencies work" (Bogdanoska Jovanovska, 2016, p.20). The deeper meaning of this term, however, is to depict the reform in the public administration functioning in a given state, which emerges as a result of the implementation of ICT.

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The focus of the reform is placed on front office, known as G2C (government-to-citizen) and G2B (government-to-business) as well as on the public administration performance with regard to the cooperation and exchange of information among institutions in the public sector, i.e. back office, also known as G2G.

Back office is a term widely used to refer to all processes, operations and information flows which are take place in the internal part of public administration institutions in order to produce and deliver the desired services (invisible to the citizens/businesses). Back office is a crucial machinery of governments. (Klischewski, 2004, p. 62) discusses the possibilities for achieving a solid back office in the framework of e-Government and states the following:

"Information integration as a vision of interorganisational information systems with main task to be accomplished is information resource design; and Process integration as a vision of inter-organisational process networks whose main task to be accomplished is business process (re) engineering."

Considering the above-said, the goals set before this concept can be achieved in two ways: a) by creating information systems and setting up data bases that would draw on the existing archives of the institutions in the public sector, or b) by devising brand new information systems, which implies establishing new public sector institutions, in charge of collecting, processing, preserving, analyzing and providing information to both the public and private sector, in a specific area.

The information flow in the public sector is based on legislation as well as administrative procedures which are in line with the legislation and which determine the route of the information and the manner in which the information is collected, stored, processed, used and exchanged within and outside a given institution. The implementation of ICT in the public sector, very frequently, implies that the information takes a different route, i.e. a shortcut as a result of the opportunities provided by the new technology in terms of greater optimization and efficiency of the processes, and, ultimately, enhancement of final beneficiaries' (both citizens and businesses) contentment. The optimal approach to these reforms is for the public administration to be observed as a whole.

Nevertheless, unfortunately, public administration is seldom viewed as a whole within e-Government. In most cases, the solutions offered are partial, only within a single area, and normally include the linking of only few institutions.

In countries undergoing transition, it is quite common for institutions to have no information exchange procedures established among themselves, due to which in their day-to-day functioning, they face a number of problems. The overcoming of these problems stipulates engineering of information systems, which, in turn, requires the establishment of new institutions in the public sector which were previously non-existent (e.g. registers, centers, and cadasters)[4].

[4] Example: The Republic of North Macedonia, in 2001, saw the establishment of the Central Register which is an institution which collects and intersects the information related to the business sector. Thus, a data base for the business sector was created, primarily in the context of recording information, and later on, within the framework of this institution, according to the needs that arose along the way, a larger number of registers were established. Taking into consideration the fact that the creation of this register was realized by means of ICT and that was a first attempt of that kind, it is an engineering of information system in the framework of G2G in the e-Government. Within the newly formed Central Register, several other registers have been established: Register of Annual Accounts, Pledge Register, Register of Prices and Leases, Register of Direct Investments, etc. www.crm.com.mk

The housing area is one the areas that are an integral part of the public sector in the Republic of North Macedonia. The housing area is quite complex and encompasses the following: classifying and making records of the housing facilities on various grounds; management and maintenance of housing facilities; management of apartment blocks and the relationship among the owners, as well as the rights of the state and the municipalities regarding housing (The Law on Housing, 2009).

Although housing as an area is placed on a central level and is under the authority of the Ministry of Transport and Communications, it is also delegated on a local level under the authority of the municipality, and its realization is monitored by inspectors.

The inspection in the area of housing (Law on Housing, 2009, article 51) is authorized to realize activities in line with the Law on Housing and when breach of legislation is detected, they initiate legal proceedings against the offenders.

The long-term monitoring of the conditions related to the results obtained from the conducted audits in the area of housing, points to a serious lack of efficiency and efficacy in their performance, which is clearly manifested in the existence of a large number of different types of offence cases which still have not been taken to the Basic Court.

The research conducted on these cases indicates that the main reasons for the unresolved status of these unprocessed cases are the following: a) difficult access to information that should be gained from the institutions in the public sector which are in possession of these data; b) long and complex administrative procedures in collecting the needed information; and, very frequently, c) lack of information (in a form and with a structure required by the inspector).

The paper at hand discusses and analyses the subject matter of housing in the Republic of North Macedonia. The paper also offers a proposal for reforms in the housing area. In Section 2, an overview of the literature on this issue is provided; whereas Section 3 depicts the research methodology. In Section 4 we present the results obtained from the research. Finally, the paper, in the last section, offers relevant conclusions as well as recommendations for further research.

2. LITERATURE OVERVIEW

The literature on the housing area in the Republic of Macedonia is relatively limited. It mainly consists of the following: laws (the Law on Housing, 2009; the Law on Ownership and Other Real Rights, 2001), rulebooks (Rulebook of Housing Norms and Standards in Apartment Buildings, 2010; Rulebook of the Form, Content and Manner of Managing the Register of Apartment Buildings and Apartments, and Rulebook of the Register of Apartment Buildings' Managers, 2010) and regulations (Regulation of the Criteria and Methodology for Categorization of Apartments and Apartment Buildings, 2010).

The number of other documents dealing with this issue is rather insignificant, and here we can mention the Manual for Managing Collective Apartment Buildings (2015). The regulation of the area encompasses both inspectorial and managerial supervision in the housing area regulated with the Manual for the Form and Content of Housing Inspectors' Certification, and for the Manner in which the Certification is Issued and Suspended (2010).

On the other hand, the literature on e-Government and the changes in the back office is rather extensive. A number of studies have been published even at the beginning of the implementation of e-Government, usually tackling the topic of Inter-organizational Information Integration (Klishewski, 2004, Prado et al., 2004; Millard et al., 2004).

3. RESEARCH METHODOLOGY

The research for the purposes of this study commenced with the method of content analysis. The analysis of the documentation by employing the on-desk approach was realized in investigating: the legislative related to the housing area; the existing literature dealing with this issue, as well as the achievements in the area of e-Government worldwide to date.

The empirical study involved field research where the research instrument employed was conducting interviews in the public sector institutions and companies in the business sector, that have been identified as possible sources or beneficiaries of information and data in the housing area.

The method of synthesis was employed to integrate the insights gained from the field research. What was created on the basis of these insights was the model for information system of a newly proposed institution in the public sector in the area of housing – Cadaster of Housing Facilities (CHF). The descriptive method was utilized in depicting the stakeholders, the input and output data and information of the Cadaster, as well as the description of the model of the Cadaster of Housing Facilities itself.

4. RESEARCH RESULTS

The research results present the mapping of a) the stakeholders (as source of data/information and as beneficiaries of data/information), and b) the data/information which the stakeholders would submit to or require from the aforementioned cadaster.

Initially, we set out to map the data/information related to a single housing facility. Having encompassed them all, we classified them into several categories:

1. ***Data referring to the housing facility itself***: address, street, number, city, square meters, type of housing, the floor where the apartment is located (if it is a part of an apartment building); the number of floors (if it is a house); the purpose of the facility (whether it is intended as residential area or business premises; whether the facility is equipped with an elevator, thermal insulation, the types of installations it is fitted with (electrical and water installation); the type of electricity installation (single-phase or three-phase power); whether the facility is empty or inhabited).
2. ***Data referring to the owner of facility***: name and surname of the person/people who are the owners of the housing facility; a document with their personal identification number; an address of current place of residence if the person does not dwell in the facility; name and surname of the person who uses the facility (if the facility has been rented).
3. 3. ***Data referring to the management of housing facility*** provided it has more than 8 separate units (according to the Law on Housing): whether the owners are represented by a legal entity which is in charge of managing the housing facility and its data; or the facility is run by the owners of the separate units themselves.

Table 1 (see below) presents a reliable overview of the linkages between the mapped stakeholders and the information/data regarding the housing facilities that they use, generate or share. This table also contains data regarding the sector to which the mapped stakeholders belong. Of particular importance is the section of the table which shows which of the mapped data are useful/needed to which specific stakeholder.

Table 1. An overview of the mapped stakeholders and data/information

SECTOR	INSTITUTION	USING DATA FROM STAKEHOLDERS	DATA for		
			ownership	object	manage
1	2	3	4	5	6
PUBLIC SECTOR	Municipality	*Tax collection of apartment rent	X	X	X
		*Annual Housing Progam			
		*Running an administrative-inspection procedure			
		*Registering Manager or Owners' Association			
	Basic Court	*Proof used at court proceedings (litigstion)	X	X	X
	Public Institution for Water Utility	*Water Bill Payment	X	X	
	Public Institution for Waste Utility	*Waste Disposal Bill Payment	X	X	
	Public Institution for Sewage System	*Recovery rate of used drainage	X	X	
	Electrical power ASM of RNM	*Electricity Bill Payment	X		
	Agency of Real Estate Cadastre of RNM	*Records of surveyed plots	X	X	
	Register of Managers of Housing Facilities	*Records of Managers of housing facilities	X	X	X
	Center for Social Works	*Records of facilities issued to caregivers	X		
	Central Register of RNM	*Registration of owners' communities	X		
	Public Revenue Office	*Records of earned income	X		
	Ministry of Transport and Communication	*Records of the number of energy efficient housing facilities		X	
	Ministry of Economy of RNM	*Records of the number of energy efficient housing facilities		X	
	State Statistic Office of RNM	*Records of the number of energy efficient housing facilities		X	
	Public Institution for Managing Residential and Business Premises of RNM	*Housing records of importance to the state	X	X	
PRIVATE SECTOR	Business Companies	*Charging services	X	X	
	Notary	*Record of sales contracts of housing premises	X	X	

Source: the authors

Based on Table 1, Figure 1 presents the model for information system which will be in possession of the new institution – Cadaster of Housing Facilities (CHF). CHF would be included 18 stakeholders in total, out of which 16 are institutions in the public sector and 2 are companies in the private sector.

In order to increase the visibility, Figure 1 represented an ego network (Petrevska Nechkoska, 2019) with bi-directorial edges featuring different colours: a) in depicting the diverse types of institutions according to the sector they belong to (blue is used for marking the institutions of the public sector; orange is used for marking the companies in the business sector, whereas the new institution in the public sector – the Cadaster of Housing Facilities, is marked with red colour and it is presented in the center of the figure); b) in presenting the relations among the institutions/companies and CHF (the black lines with arrows pointing to both directions depict the two-way information exchange and the delivery of data to CHF as well as using informa-

tion provided by CHF, the blue arrows present information that CHF collects from institutions, whereas the orange arrows stretching from CHF to the institution/company show the institution which would get information from CHF).

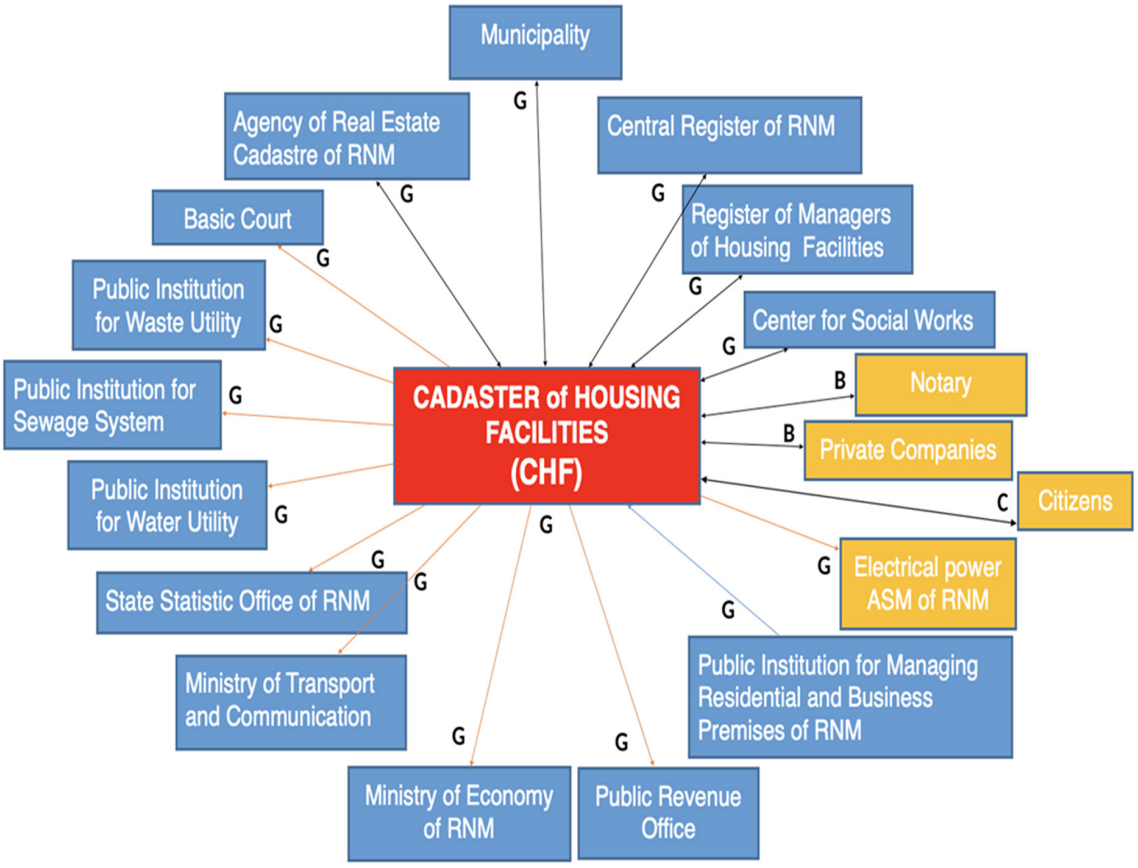

Figure 1. Cadaster of Housing Facilities (CHF), ego-network, visualization of G2G, G2B and G2C links

Source: the authors

5. CONCLUSION AND RECOMMENDATIONS FOR FUTURE RESEARCH

More than 15 years ago it was noted that there is "a bottleneck in electronic government is the co-operation between front office and back office and between back offices, which obstructs the seamless exchange of information" (Klishewski, 2004).

The housing area, as one of the areas which are part of the public sector of the Republic of North Macedonia, is faced with a clear lack of connection among the institutions that are directly related to the issue of housing.

The analysis of the results gained from this research point to three main conclusions:

- The establishment of Cadaster of Housing Facilities via making use of the opportunities offered by the novel ICT in terms of provision of comprehensive records of the housing facilities will contribute to the rise in the efficiency and effectiveness of the functioning of all stakeholders (institutions in the public sector and companies in the business sector) in the housing area, particularly, when it comes to the realization of the activities in the domain of auditing in this area;

- Most if the stakeholders pinned down that are also proposed for inclusion in CHF, are not even mentioned in the Law on Housing, which points to the fact that the current legislative should not be taken as a signpost in creating new ICT- related solutions. On the contrary, what is needed is thinking 'outside the box' and open-mindedness in order to offer user-friendly solutions;
- The two-way communication in terms of input of data in CHF and output – usage of information from CHF by the institutions in the public sector or the companies in the private sector showed that as many as 79% of the stakeholders would demand information from CHF out which 47% would only use the information and 32% would provide as well as use information, which indicates that there exists a solid basis for sustainability of CHF. Only 21% of the stakeholders would merely submit information to CHF without using any information from CHF whatsoever. These insights clearly confirm the greatly pronounced need for the establishment of such a register.

The recommendations for further research in the housing area related to CHF could go in two possible directions: a) firstly, following the example of the Central Register of the Republic of North Macedonia, it is expected that CHF will serve as a role model for the establishment of other registers, as the need arises, in the course of the functioning of CHF; and secondly, since CHF is envisioned as part of G2G relation within the implementation of the e-Government, which at this stage merely points to the improvement of G2G functioning of e-Government, consequently, the future research endeavour could be directed at studying the effects of this role-model on the functioning of G2B and G2C.

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PACKAGING WASTE ECONOMY: INSIGHT INTO EFFICIENCY OF MONOPOLISTIC AND COMPETITIVE WASTE MANAGEMENT SYSTEMS IN THE EU

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Abstract: *This paper reviews different packaging waste management systems in the member states of the EU, organized as Extended Producer Responsibility (EPR) systems. The principle of responsible waste management in EU is influenced by policy goals and assignments. Individual member states must ensure that set waste management goals are met. The individual Member States comply with these goals using different regulatory instruments as EU does not set how these goals are to be achieved. Therefore, there are various systems in individual countries that achieve different results. Topic of this paper offers unique opportunity to compare efficiency of different regulatory tools in each country. There are two major groups into which this paper categorizes individual packaging waste management systems: monopolistic systems, and competitive systems. Comparison of results and cost effectiveness of individual packaging waste management systems helps to seek optimal organization of packaging waste utilization systems.*

Keywords: *Waste management, Extended producer responsibility, Producer responsibility organization, Regulation.*

1. INTRODUCTION

Modern society of today ,s world cannot do without support of values that are linked to problem of public goods, sustainable development, nature conservation and other areas that are in so-called public interest. In mentioned areas individuals usually come to an agreement on essence of the idea – protection of nature is a good thing, but we very often lack the willingness to pay for such things – I do not want to pay, make someone else or the state to pay for it. This important aspect leads to redefinition of such activities to higher societal level with so called public interest, or directly to public goods itself that are provided by state through a combination of regulations and fiscal policy.

Same principle goes for the activity of state institutions in the field of waste management, more precisely in the field of sorting and recycling of packaging waste. Primary focus here is also on protecting the environment and on perverse motivation of a rationally behaving individual in form of transferring of costs and responsibilities on other members of society which leads to a situation where there is no spontaneous motivation to sort and recycle packaging waste to a sufficient extent. This is exactly why a political goal expressed by mandatory levels of sorting and recycling of waste in member states of European Union was institutionalized.

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This binding political goal thus artificially created an area in which the motivations of the individual actors are given by obligations arising from their position and the effort to meet the political objective at the minimum cost (the regulator regulates and controls, the object is regulated). However, this area is not a standard market with characteristic supply and demand, so it is not possible to apply the basic apparatus of neoclassical economic theory that is commonly used to explain the processes in the markets. This issue is one of the key issues of the following lines.

2. REGULATION OF WASTE MANAGEMENT

In the case of policies that are related to environmental protection in waste management, it is rather the solution of problems that are caused by negative externalities that is on the agenda of the day. Economics describes possible solutions to problems caused by externalities:

1. Negotiation between affected agents as Coase explains (1960): In terms of clearly defined and easily enforceable property rights, it is more efficient for two agents affected by externality to bargain and agree on a solution than risking a legal dispute at the court of law. For example, a farmer that fertilizes his field to increase his production of crops offers a compensation to an owner of a pond that is polluted by farmers actions. The problem of negative externalities is solved after both parties agree on an amount of compensation. Coase theorem only works if transaction costs of such bargaining are zero or at least close to zero.
2. A state intervention that was described by Pigou (1920): Stat creates barriers (conditions to enter the market, subsidies and taxes, sanctions and fines) using his regulatory power to behavior that would be associated with the emergence of negative externalities. State uses its regulatory power to create conditions in which the generation of negative externalities is difficult and costly. State can for example introduce a law that sets rules on how to manage waste - obligation to ensure the collection of waste, fine for illegal disposal of waste, etc.

Regulating waste management policies is nothing more than creating barriers in the field of waste management to prevent the emergence of negative externalities or to eliminate them as much as possible. The principle of Pigouvian tax is usually implemented, because the conditions that are necessary for Coase theorem to work efficiently are unrealistic in most European countries.

3. EXTENDED PRODUCER RESPONSIBILITY

Policy goals of EU in the field of waste management are not accompanied by binding instructions on how the targets are to be met. Which means that every member country has the opportunity to come up with a solution of their own. This led to a mix of objectives and instruments that turned European waste management into a unique laboratory for economics of regulation. Very effective concept of transferring private bargaining to a specific area that is explained by Palmer and Walls (2016) and that is called Extended Producer Responsibility (EPR) emerged out of this laboratory.

In the case of packaging waste, the principle so-called EPR (Extended Productivity Responsibility) is most often applied. The idea of the EPR concept is very broad and is based on belief that producers should be both physically and financially responsible for environmental impact of their activities. The EPR principle is de facto based on the idea that producer in order to distribute its products and sell it to the consumer must protect these products by some kind of packaging. But because this packaging is not part of the consumption, the manufacturer should ensure that it is disposed of in accordance with environmental protection and sustainability in waste management requirements. The consumer's responsibility to dispose of the packaging of purchased goods is

therefore transferred to the producer, who must ensure that packaging waste does not adversely affect the environment. Under this principle, manufacturers provide the supervision of the circulation of packaging material that is used for commercial purposes, including its collection, subsequent recycling and recovery. In general, as Palmer and Walls (2016) mentions, the EPR is the part of PPP concept (Polluter Pays Principle), where the costs of waste utilization are transferred to polluter, the packaging waste producer. The system is trying to internalize externalities.

4. ORGANIZATION OF WASTE MANAGEMENT MARKETS

Manufacturers are willing to fulfil their responsibilities within the collective scheme in EPR systems. This collective system then organizes collection and other waste management services and generates significant economies of scale.

The collective system has the prerequisites for establishing a sufficiently dense and accessible collection network to collect waste from all involved manufacturers. Therefore, it is not necessary for each producer to set up his own containers or for the consumer to transport the waste far from his residence. Within one network, the obligations are met. The system is then financed by fees from the producers who delegated their responsibilities to the system. Fees are mostly derived from the volume of generated waste. Its operator, besides waste collection, often performs other activities, such as educating consumers and supervising compliance with the rules and limits set by law.

As mentioned above, there is no unified form of collective system in the EU. Each country can thus set its own system operating rules. This creates considerable diversity between different systems in Europe. They differ, among other things, in the ownership structure where the collective system can be owned, for example, by the producers, the state, the investment fund or another private company. The operator of the system can either operate as a single operator or there can be more operators within one country. If there are more than one operator, there may be so-called division of the system, where each operator has its scope. The distribution may be based on the type of waste, material, or region. The division can either be unrivaled or rivaled. In the first case, the scope of the operators does not overlap and in the other, the operators can compete.

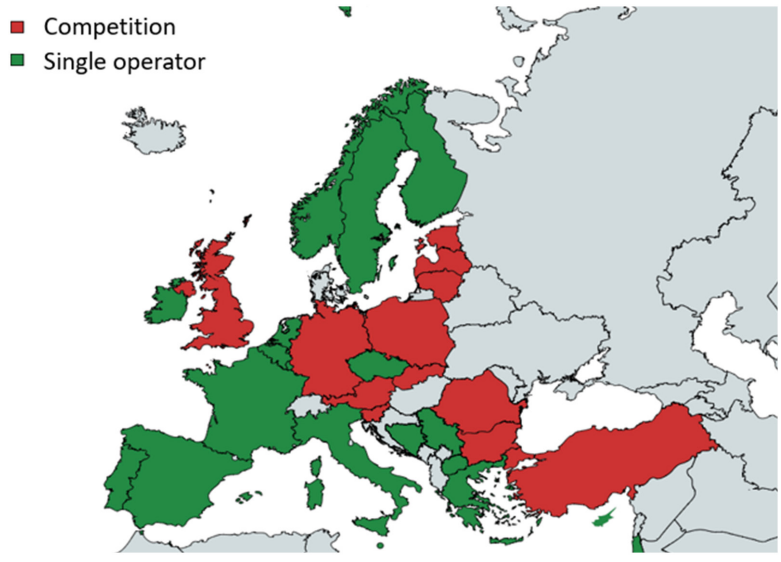

Figure 1. Breakdown of EU member states with regard to the organization type of their waste management system

Source: Rod, Reis, Benko 2016

In the EU, with regard to the functioning of the waste management system, member states can be divided into two groups:

1. Member States with a single operator system: (16 countries): Czech Republic, France, Belgium, Netherlands, Ireland, Finland, Denmark, Norway, Sweden, Spain, Cyprus, Greece, Italy, Portugal, Hungary, Luxembourg.
2. And to countries with a system where 2 or more operators compete (12 countries): Austria, Germany, the United Kingdom, Poland, Estonia, Romania, Lithuania, Latvia, Slovakia, Slovenia, Bulgaria, Malta.

5. EPR SYSTEMS: SINGLE OPERATOR VS COMPETETIVE MODEL

Difference between the competitive and monopolistic organization of the system operators does not seem to be apparent from the point of view of the officially reported achieved rates of recycling and utilization. Although this statement is in contradiction with general assumptions of neoclassical economic theory, competition between collective system operators does not create significant advantages over monopoly arrangements. The opposite is true. Practice shows that natural market principles logically do not occur on a regulated market.

The packaging waste recycling market, however, differs significantly from the market defined by e.g. Simpson (2015). Here are the main differences: As opposed to the market defined by economic theory, the packaging waste market does not spontaneously arise. Since there was a policy goal to create a system for internalizing the packaging waste externalities, a sorting and recycling system was set up and defined by the policy objectives. This politically created system of internalization of externalities is called the „market", see below.

The market defined by economic theory is defined primarily by the demand based on the preferences of the members of the society that supplier seeks to saturate by its products and services. Demand means willingness to pay for something that increases utility. In the field of sorting and recycling of packaging waste, there is no spontaneous demand for recycling because there is a lack of willingness to pay for the increased utility caused by it. There is also no spontaneous supply.

On market defined by economic theory is a clearly identifiable demand side (an individual who is willing to pay for the increase of utility through the consumption of goods) and the supply side (an individual who saturates the supply with goods he manufactures and / or delivers on the market). In the packaging waste market, there is no definition of supply and demand - the demand for „mandatory sorting and recycling" is not a demand of a consumer, nor is it a demand of packaging waste producer. It is not even a demand of a regulator who does not offer or demand anything, regulator only tries to internalize negative externalities in the environment.

The cost of goods on a market defined by economic theory is defined by the interaction between supply and demand, i.e. in a simplified way between the production costs of the supplier and the willingness to pay of the agent who is demanding goods. In market for sorting and recycling of packaging waste, there is no similar scheme. The spontaneous pricing mechanism is replaced by the quantification of the system costs that is divided among participants of the system, which are involved in its financing.

On a market defined by economic theory, competition has clear positive effects. Competing entities want to attract as many clients as possible, so they try to combine attractive factors such

as lower product price, higher product quantity on one money unit spent, pressure on product quality, pressure on product innovation, etc. In the sorting and recycling of waste system, however, the fulfilment of these desirable targets is not triggered by higher number of competing entities, because „product" is defined as a service for which there is de facto there no demand. Consequently, competitors will only try to reduce costs for obligated participants, which will logically lead to a lack of resources that are necessary to meet the desired policy goal.

An entry of a new entity that wishes to get a share in the system and its associated funds, it can only do three things: increasing the total cost of the system, choosing only the most lucrative parts of the system to optimize its cost structure (cherry picking), or fraudulent behavior (e.g. adjustments to financial statements, export / import of packaging waste abroad, etc.). All these strategies are undesirable from the point of view of meeting the political goal, as they do not increase the effectiveness of the system.

On a market defined by economic theory, the market is divided according to the economic criteria, which are chosen by the demanding side on basis of the quality of the offered farm. In the sorting and recycling system, even in the light of the lack of information, they cannot evaluate the quality of the service and therefore they prefer the solution that is cheapest. In a transparent system with one PRO, there is no room for cost reduction or service quality improvement, without having an impact on meeting the increasing political goals. Paradoxically, more entities create room for less efficiency.

The aspects mentioned above are reflected in the performance of systems with one PRO operator (so-called monopoly system, single-operator system) and multi-operator systems (so-called competitive system, multi-operator system).

6. EPR SYSTEMS: FEES COMPARISION

The idea that a narrow circle of major PRO owners can theoretically use their position to the detriment of the rest of the obligatory industry is rational, but in practice of a monopoly provider not possible. In the Czech system, as well as in many other monopoly operators, all public fees are minimized - there is no price discrimination on either the obligatory industry or the municipalities involved, especially the differences in small, remote settlements (very costly from the point of view of recycling) and large, infrastructure-equipped cities (very profitable from the point of view of recycling). Since the only system on the market does not have reason to hide its prices from competitors, it enables price discovery to analyze the cost and effectiveness of the system.

The collective recycling system is a monopoly in Austria, Belgium, the Czech Republic, France and the Netherlands. It is competitive in Germany and the UK. Calculated as fees per ton of utilization (household waste) per capita. At first glance, costs in the UK seem to be the lowest lower, but the manufacturer's fees cover only about 10% of the total cost. The actual cost is about 10 times that. In France, fees cover 75% of the costs. In other countries it is 100%.

If we compare this situation with the competitive system in Germany, where the fees of the obligatory industry are subject to business secrets, the price discrimination (disadvantage) of smaller packaging producers definitely occurs. Trade secrecy in the field of fees does not lead to a transparent environment where there would be no preference for certain obligated companies.

In Germany, Austria and other competing PRO countries, this behavior is a major problem, especially in the form of high transaction costs of smaller entities facing price discrimination, who must oppose it by forming municipality associations, lawsuits or lobbying to establish a legal obligation to publish price lists and thus eliminate price discrimination.

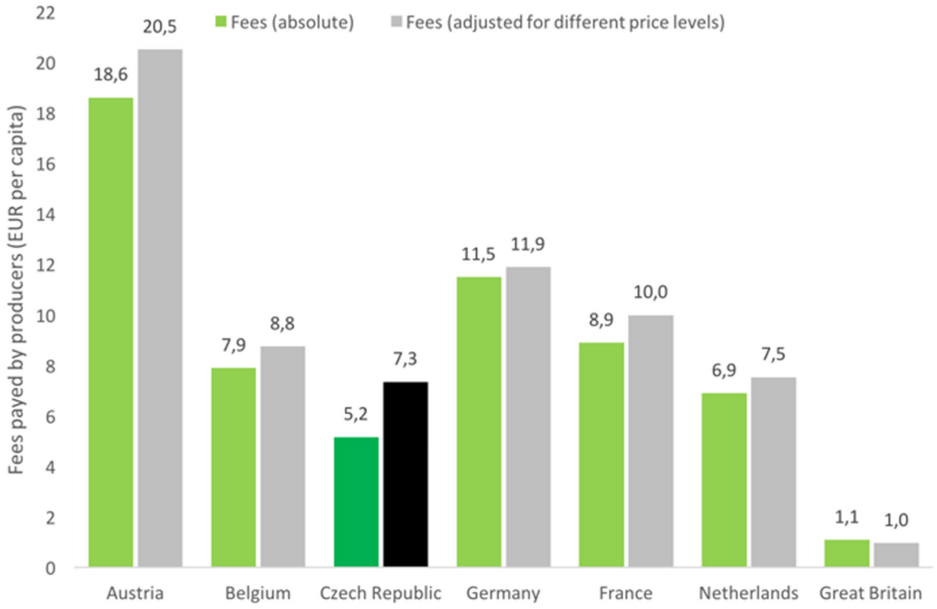

Figure 2. Fees of obligatory industry in individual countries
Source: (Monier et al., 2014); Eurostat, data from 2010–2012

It is precisely on the existence of intermediaries who help to negotiate more favorable conditions that we can demonstrate from the point of view of economic theory the fundamental inefficiency. In Austria, smaller municipalities join associations to try to achieve a more favorable price level. But even negotiations are associated with additional costs.

Based on recent development in selected EU countries as also e.g. PRO EUROPE (2016) mentions, it can be quite surprising to say that a competitive system not only does not generate better results than a single operator system but also brings a number of disadvantages such as higher transaction costs, low system transparency, higher administration requirements, higher motivation to fraud, more room for avoiding obligations by manufacturers and system operators, and hence higher demands for regulation and control by the state.

Practical experience shows us that natural market principles do not logically occur on a regulated market. This also has an impact on the performance of the entire industry. The obvious difference does not appear to be between the competitive and monopoly organizations of the system operators nor in terms of officially reported recycling and recovery rates.

This is demonstrated by official results of packaging waste systems from EU countries that are available from an official statistical report done by Eurostat. Results of individual systems are available in Figure 3, which offers comparison of packaging waste recycling rates in selected EU countries from 2017 in %. EU 28 average lies at 67 % recycling rate of packaging waste. The best result of 84 % recycling rate of packaging waste was achieved in Belgium with single operator system. Second best of 78 % is achieved in Netherlands that also has single operator system. Third (Denmark) best and fourth (Czech Republic) best results are also achieved with a single operator system.

This situation does not offer a hard evidence that single operator systems are better than competitive models. It simply shows that desired results are achievable with "monopoly" systems and that they do not lag behind in context of waste management in EU.

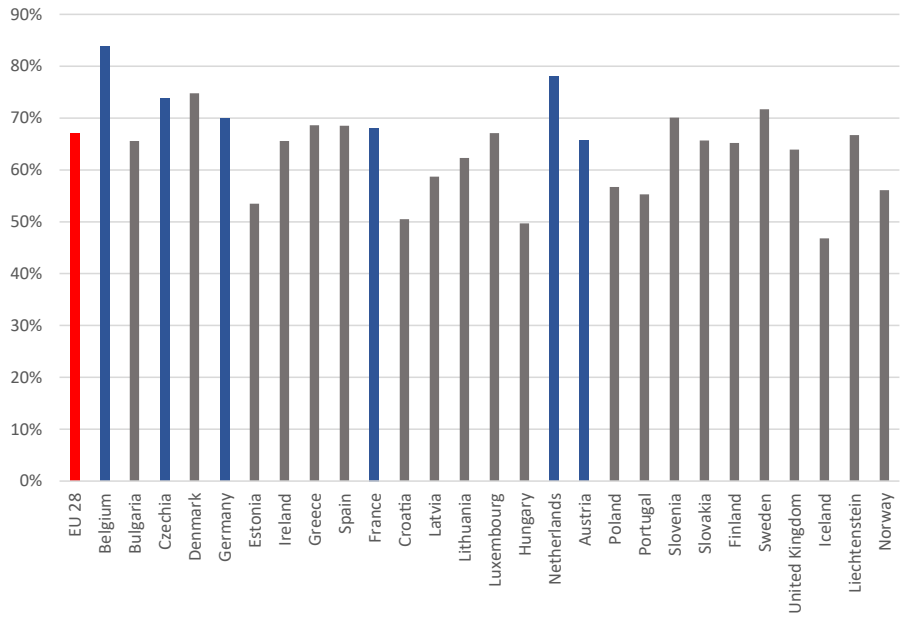

Figure 3. Domestic packaging waste recycling rates (%) in selected EU countries in 2017
Source: (Eurostat, 2019); Eurostat, data from 2017

FUTURE RESEARCH DIRECTIONS

As far as the extended producer responsibility is, according to the ongoing EU legislation directives SUP (Single Use Plastics) and CEP (Circular Economy Package), a preferred approach to organizing waste economy systems in EU member states, we can expect a massive implementation of these structures into practice, both monopolistic ones (single operator) and competitive ones (multi operators). Different implementation conditions, geographic dispositions, socio-demographic structures and other factors will provide an excellent environment for further research, mainly from a perspective of efficiency (meeting EU goals) and economy (costs transposed into waste collection fees). Our future research will be pointed on international comparisons using actual data as well as modelling optimal structures of waste economy systems in individual countries with respect to multifactor analysis.

CONCLUSION

According to mainstream economic theory' conclusions, a market competition brings substantial social better offs in terms of pricing, qualitative and quantitative aspects, availability, development of new products, etc. This opinion, as a mantra, is mentioned when setting regulatory structures in individual market segments, waste economy included. This conclusion, without any doubts, is valid for any economic market with demand side and supply side, both powered by standard economic preferences. However, when we talk about packaging waste management systems, we do talk about a very special market – preferences of demand side are set rather by regulation (political goals) than spontaneous utility-maximizing action, while supply side is boosted by public money (grants and subsidies, public tenders, etc.) and rent-seeking rather

than spontaneous profit-seeking. Thus, mainstream economic conclusions about competition are not applicable automatically. In our analysis, we were unable to reject the null hypothesis that competitive packaging waste economy systems provide better results in terms of economic efficiency, material efficiency, pricing, etc. We observed that some monopolistic and competitive systems are able to generate high and low recycling rates as well as high and low fees for its participants, however we are unable to conclude that competition brings better results. Actually, the opposite is true. Monopolistic systems, thanks to clear structure, transparent pricing, no rent-seeking side expenditures, etc., provide very high recycling rates of individual materials with low fees and well-defined responsibility for all areas, marketing or social education included. This must be a very important message for all decision-makers in the EU, who would blindly make pressure for establishing competitive packaging waste economy systems. When dealing with non-standard markets, competition does not routinely mean better results.

ACKNOWLEDGEMENT

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LABOR PRODUCTIVITY, WAGE INCREASE AND INFLATION, AN EASTERN EUROPEAN APPROACH

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Abstract: *Labor productivity has been the basis for one on one economic wage growth in all developed countries. The paper is analyzing the prospect of measures taken by the European 13 countries that became EU members in 2004, 2007 and 2013 regarding compensation of employees per hour worked expressed in EUR, the evolution of the real labor productivity per hour worked index where 2010=100% and the impact on inflation expressed in percentage change. For this approach, Eurostat database was consulted and for a better understanding, the study was done for the period of time starting from 2004 for Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia, from 2007 for Bulgaria and Romania, and from 2013 Croatia. Based on the analysis results, should pinpoint conclusions regarding the evolution of the indicators and the impact that they had on price stability.*

Keywords: *Labor productivity, Wages, Inflation.*

1. INTRODUCTION

Labor productivity is an important economic indicator for the business environment and national economies alike, because the wage increase of public and private employees are closely correlated with it. Economists have struggled to connect labor productivity with wage growth through numerous articles and papers examining the connection, trying to give a positive feedback about the struggled relationship between the two indicators. Feldstein M. (2008) highlights that the relation between growth in productivity and the rise of wages for all the workers should be a symmetrical. He states that *labor productivity is defined as the output per hour of labor input, i.e. as the average output per unit of labor.*

Gordon (1986) started to tap the lack of measures taken by the European governmental institutions and privately owned companies to increase wages and not to fear about the negative aspect of *extra inflation with no bonus of extra output*. Others like Hellerstein J., Neumark D., Troske K. (1996) tried to correlate the indicators with individual-level data on workers revealing the inputs and the outputs of industry and the changes in earnings. Labor productivity was also on the mind of Biesebroeck Van J. (2003) where a comparison was made between *the marginal productivity of different categories of workers with the wages they earn*. Faggio G., Salvanes K., Reenen Van J. (2007) got to the conclusion that the diffusion of new technologies and the use of skilled human resources in the technological sector heterogeneously across firms *has increased both the spread of productivity and the spread of wages.*

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More recent studies undertaken by Stansbury A., Summers L. (2017) were focused on the substantial variations in productivity growth that have taken place during recent decades and have been associated with substantial changes in median and mean real compensation; or Lazear E. (2019) thinks that changes in productivity are the outputs of different educational levels being more than sufficient to account for changes in the wage distribution.

Based on the aforementioned theories, the percentage of wage increases must coincide with the percentage of increased labor productivity. If the percentage of wage increases is either higher than the percentage of the increased labor productivity, or is lower, it leaves room for certain discrepancies in the economy, foreseeing either more burden placed on the wage expenses in the total expenses of the private companies or of the state, or the private companies or state institutions have more disposable income for other types of expenses.

Table 1. Real labor productivity per hour worked expressed in %

GEO/TIME	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Bulgaria	83	87	90	93	95	96	*100*	105	108	109	110	114	118	120	124
Czech Rep.	86	90	96	100	100	98	*100*	102	102	102	104	109	108	111	112
Estonia	80	85	89	96	93	95	*100*	99	102	103	106	105	107	110	117
Croatia	99	102	104	106	105	98	*100*	104	106	109	107	112	116	117	119
Cyprus	94	97	101	100	100	99	*100*	100	100	101	101	102	103	104	104
Latvia	84	91	96	103	94	97	*100*	104	108	108	111	115	117	123	126
Lithuania	79	85	92	98	101	96	*100*	107	109	112	115	114	113	121	123
Hungary	88	93	97	100	102	99	*100*	103	101	102	101	103	100	103	107
Malta	97	96	96	98	98	96	*100*	102	103	106	111	119	118	122	123
Poland	84	85	88	90	91	94	*100*	105	107	108	110	112	114	119	127
Romania	77	81	87	92	103	102	*100*	104	107	112	116	122	128	135	141
Slovenia	88	94	99	103	103	97	*100*	104	103	102	103	104	107	111	114
Slovakia	81	84	89	95	97	95	*100*	102	104	106	109	112	113	115	118

Source: Eurostat

In the case of the above table, the analysis is based on Eurostat data for all the 13 member countries of the European Union that joined since 2004, the data being expressed in percentages, and, the basic year for calculation is 2010. From the table it appears that all countries have registered an increase in labor productivity since 2011, with the exception of Estonia, which in 2011 registered a decline in terms of the analyzed indicator.

If we look closely at the table, we can see a sharp increase in labor productivity since 2010 for a group of states, which at the end of 2018 registered an increase of more than 20% compared to 2010. Here we can see how Bulgaria reached 124%, Latvia reached 126%, Lithuania reached 123%, Malta reached 123%, and Poland reached 127%.

Romania is the only country with an increase of labor productivity reaching 141% compared to 2010. It is the largest increase in labor productivity recorded by a country that has recently joined the European Union and is in full process of economic integration. This significant increase may be due to the discrepancies existing between the Eastern and the Western economies in terms of economic development and which achieve greater jumps in labor productivity due to the positive economic measures taken during the post-accession period.

Now that the evolution of labor productivity has been reviewed, a correlation of this indicator with the evolution of the wage increase in the 13 analyzed countries in the table below is being done next.

The same formula was applied to the evolution of wage increases, namely: based on Eurostat data, all 13 EU member countries that acceded since 2004 were analyzed, the data being expressed in EUR per hour worked.

As can be seen in the table below, all the countries at the time of accession to the European Union recorded depreciated revenues compared to the reference year 2010.

What is interesting, however, is happening around the base year 2010, because at that time the international financial crisis had made its presence felt. The years 2009 and 2011 are years in which in theory the wage incomes per hour worked should decline due to a slowdown in consumption and production, but as shown in the table below, there are countries that defy the crisis and continue the wage increases, these countries being: Bulgaria, Estonia, Cyprus, Malta, Slovenia and Slovakia. The rest 7 countries analyzed recorded a slowdown of the wage income per hour worked, even if it took years for those values to reach the same level of 2008 or slightly higher.

Table 2. Compensation of employees per hour worked expressed in EUR

GEO/TIME	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Bulgaria	1,7	1,9	2,0	2,3	2,6	2,9	3,2	3,4	3,7	4,0	4,2	4,4	4,7	5,2	5,7
Czech Rep.	5,5	6,0	6,8	7,4	8,5	8,0	8,5	9,0	9,0	8,7	8,4	8,8	9,1	9,9	11,0
Estonia	4,0	4,4	5,1	6,4	7,1	7,4	7,4	7,4	8,0	8,5	9,1	9,4	10,0	10,7	12,1
Croatia	6,7	7,2	7,4	7,8	8,3	8,2	8,3	8,4	8,5	8,4	8,0	8,4	8,5	8,7	9,0
Cyprus	12,4	13,6	14,1	13,8	13,9	14,8	14,8	15,0	15,3	14,7	14,2	13,9	13,6	13,9	14,0
Latvia	2,8	3,4	4,2	5,7	6,3	5,7	5,3	5,4	5,9	6,3	6,7	7,4	8,0	8,6	9,3
Lithuania	3,4	3,8	4,6	5,2	5,9	5,6	5,4	5,8	6,1	6,5	6,8	7,1	7,4	8,3	8,9
Hungary	5,9	6,5	6,5	7,3	7,9	6,9	7,1	7,3	7,3	7,2	6,9	7,0	7,0	7,6	7,9
Malta	8,5	8,3	8,6	8,9	9,2	9,4	10,0	10,6	11,0	11,5	12,0	12,7	12,7	13,1	13,4
Poland	3,7	4,2	4,5	4,9	5,7	4,8	5,7	5,8	6,0	6,1	6,2	6,3	6,3	6,9	7,5
Romania	1,8	2,6	3,0	3,5	4,3	3,7	4,1	3,9	3,9	4,1	4,4	4,5	5,1	5,8	6,5
Slovenia	10,8	11,7	12,5	13,3	14,2	14,3	14,7	15,1	15,1	15,0	15,1	15,2	16,1	16,9	17,7
Slovakia	4,2	4,7	5,3	6,3	7,2	7,8	8,0	8,2	8,5	8,8	9,0	9,3	9,6	10,3	11,0

Source: Eurostat

If we take a close look at the subsequent evolution of wage incomes per hour worked, we can observe that Cyprus has registered a decline of this indicator. This fact can be attributed to the financial measures on the banking sector in Cyprus by the European Commission, which has led to a severe economic correction, affecting the growth and development for the Cypriot economy.

The rest of the countries, on the other hand, experienced an upward trend in wage incomes per hour worked, even if some countries had a better advance or some countries had a more modest advance, such as Croatia, whose wage income per hour worked only increased less than 1 EUR since 2013, the year of the country's accession to the European Union.

Now, if we are to make a parallel between the percentage of wage increases and the percentage of the increase in labor productivity, we can see that both indicators have registered significant increases, but more evident is the increase of the wage incomes per working hour.

Approximately all the 13 countries analyzed recorded a higher increase in the wage income per hour worked than the percentage of the increase in labor productivity, except for Croatia and Cyprus, where the percentage of the increase in labor productivity was significantly higher than the increase of the wage income per hour worked.

Bulgaria, Estonia, Latvia, Lithuania, Malta, Slovenia and Slovakia, with the exception of one year, have registered from the reference year 2010 increases in wages per hour worked significantly higher than the percentage of labor productivity's growth. Private companies and state institutions in these countries offered higher wages each year, disregarding economic theories that suggest a correlation of wage increases to labor productivity.

These wage increases also stem from the need to maintain well-skilled workforce in the country of origin to ensure sustainable future economic growth and development, trying to limit the bleeding of human resource exodus towards Western countries.

The other 4 countries analyzed: Czech Republic, Hungary, Poland and Romania, although towards the end of the analyzed period they also have an evolution similar to the other 7 countries mentioned above, in the sense that they registered increases in wage incomes per hour worked higher than the percentage increase for labor productivity. Labor productivity towards the end of the analyzed period registers a path of economic development close to traditional economic theories.

If we were to make a comparison between the countries that registered a higher upward trend in the share of wage incomes compared to the countries that registered a trend within the limits of the economic theories or those that were more cautious and that did not offer increases of wage incomes per working-hour over the percentage of increased labor productivity should, in theory, be affected by inflation.

In the following table, the present paper analyzes the impact of the measures adopted by the private companies and governmental institutions in the 13 countries analyzed on the inflation rate index. Any wage increase, above or over labor productivity, should automatically generate inflation.

Table 3. HICP annual average rate of change

GEO/TIME	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Bulgaria	6,1	6,0	7,4	7,6	12,0	2,5	3,0	3,4	2,4	0,4	-1,6	-1,1	-1,3	1,2	2,6
Czech Rep.	2,6	1,6	2,1	2,9	6,3	0,6	1,2	2,2	3,5	1,4	0,4	0,3	0,6	2,4	2,0
Estonia	3,0	4,1	4,4	6,7	10,6	0,2	2,7	5,1	4,2	3,2	0,5	0,1	0,8	3,7	3,4
Croatia	2,1	3,0	3,3	2,7	5,8	2,2	1,1	2,2	3,4	2,3	0,2	-0,3	-0,6	1,3	1,6
Cyprus	1,9	2,0	2,2	2,2	4,4	0,2	2,6	3,5	3,1	0,4	-0,3	-1,5	-1,2	0,7	0,8
Latvia	6,2	6,9	6,6	10,1	15,3	3,3	-1,2	4,2	2,3	0,0	0,7	0,2	0,1	2,9	2,6
Lithuania	1,2	2,7	3,8	5,8	11,1	4,2	1,2	4,1	3,2	1,2	0,2	-0,7	0,7	3,7	2,5
Hungary	6,8	3,5	4,0	7,9	6,0	4,0	4,7	3,9	5,7	1,7	0,0	0,1	0,4	2,4	2,9
Malta	2,7	2,5	2,6	0,7	4,7	1,8	2,0	2,5	3,2	1,0	0,8	1,2	0,9	1,3	1,7
Poland	3,6	2,2	1,3	2,6	4,2	4,0	2,6	3,9	3,7	0,8	0,1	-0,7	-0,2	1,6	1,2
Romania	11,9	9,1	6,6	4,9	7,9	5,6	6,1	5,8	3,4	3,2	1,4	-0,4	-1,1	1,1	4,1
Slovenia	3,7	2,4	2,5	3,8	5,5	0,8	2,1	2,1	2,8	1,9	0,4	-0,8	-0,2	1,6	1,9
Slovakia	7,5	2,8	4,3	1,9	3,9	0,9	0,7	4,1	3,7	1,5	-0,1	-0,3	-0,5	1,4	2,5

Source: Eurostat

However, what can be observed in the previous table is the fact that all the analyzed countries are experiencing a decline in the inflation rate since 2011, 2012 and even continuing to register deflation starting in 2014, continuing in 2015, 2016.

Starting with 2017, all the countries analyzed begin to register inflation again, but at a lower level. Only Romania and Estonia at the end of 2018 had an inflation rate above 3%, Romania marking 4.1% and Estonia registering 3.4%. The rest of the analyzed countries recorded percentages lower than for these two cases.

If we compute the average of the harmonized index of consumer prices of the 13 countries, the final value is 2.3%, which is not significant. Furthermore, all the 13 analyzed countries have inflation targeting measures and they all stick to figures that can have a depreciation or appreciation effect. For example, Romania's inflation target is 2.5% but the depreciation or appreciation effect of inflation must be kept in a ±1%. The 4.1% is close to the 2.5% established by the Romanian central bank. For sure the rest of the 12 analyzed countries have inflation targeting measures themselves.

From the analyses carried out, there is no link between the percentage of wage increase, the percentage of labor productivity growth and their impact on the inflation rate index.

CONCLUSION

Raising wages without real support from increased labor productivity shows that it does not have a devastating impact on the harmonized index of consumer prices. As can be seen in the study carried out, especially in table 3, the evolution of the harmonized index of consumer prices is a smooth, predictable one, without any special jumps that will cause imbalances in the 13 analyzed economies.

All the 13 analyzed countries record the harmonized index of consumer prices below the value of 4%, only Romania being the only country with a value of 4.1%. If we compute the average of the harmonized index of consumer prices of the 13 countries, the final value is 2.3%, which is not significant. Furthermore, if we take into consideration the harmonized index of consumer prices of 2% targeted by the European Central Bank and take it as a benchmark, one can conclude that the deviation from this target is not a severe one.

The correlation between wage growth and labor productivity must remain valid in the future, but this future should not be viewed with fear as to the effects that a disproportionate increase in pay relative to labor productivity will have on the harmonized index of consumer prices.

The paper emphasizes that the impact in the 13 countries analyzed is a minimal one, which can be kept under control by the central banks of the respective countries through sustainable monetary policy measures and prudent fiscal policy.

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