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**9th International Conference of the
School of Economics and Business**

Conference Proceedings

October 12, 2018

Sarajevo, Bosnia and Herzegovina

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**School of Economics
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9th International Conference of the School of Economics and Business

CONFERENCE PROCEEDINGS

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The papers have not been proof-read and the authors assume sole responsibility for any errors.

FOREWORD

Following earlier conferences with participants from nearly all over the CEE region as well as from many other countries, the School of Economics and Business in Sarajevo is proud to host the 9th International Conference. This conference aims to bring together academics as well as practitioners to discuss diverse issues in the fields of economics and business with a focus on transition economies. The purpose of this conference is to disseminate high quality research and to promote scientific information interchange between researchers, developers, students, and practitioners.

This conference offers a variety of research perspectives from a number of Central and Eastern European countries. This wide-ranging research context forms the basis for studies in different fields: economic development, international economics, business administration, marketing, information technology, insurance and etc.

As was the case in earlier ICES conference it is our pleasure to inform conference participants that selected papers presented at this conference will be considered for publication in a special issue of the South East European Journal of Economics and Business published by the School of Economics and Business.

Also, we would like to invite you to submit your paper for publication in this journal in the future. We strongly believe that the discussions between prominent and experienced researchers at the conference will serve as a solid bases for improving your paper and enriching your further research focusing on transition countries.

We would like to thank all the authors who prepared and submitted their papers to ICES2018.

A special thank is addressed to keynote speaker, Maks Tajnikar, Faculty of Economics, University of Ljubljana. We are certainly aware that it has taken time and effort to take part in this Conference, and this is much appreciated.

We would also like to express our gratitude to all participants for their expertise and for sharing their views and ideas which present the most important contribution to the sucess of this Conference.

It was with great pleasure that my colleagues and I had this opportunity to host such a conference.

Sarajevo, October 2018   Eldin Mehic
                                                                   Editor

CONTENT

IT AUDIT QUALITY FACTORS IDENTIFICATION IN THE FUNCTION OF BUSINESS CONTINUITY: A SYSTEMATIC LITERATURE REVIEW

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Abstract

The security of information technologies (IT) and related IT risks have been a significant issue in the audit of organizations. Vulnerability and the risks that organizations face through potential failures in IT security are jeopardizing the overall system of internal controls. The environment is now becoming more and more complex; businesses are becoming more and more dependent on information technology. New types of risks are constantly emerging, while at the same time the tolerance for a system or business failure is reducing, i.e., the requirement for the business continuity is evident. Business continuity management is a business management approach that identifies the potential impacts of threats on businesses and provides a framework for effective response and recovery. The demanding, turbulent and dynamic ICT market needs to be regulated with the goal of protecting both resources and customers or consumers. In order to verify that organizations in such a dynamic ICT market operate in accordance with the standards and whether they comply with the regulations, laws, and by-laws, it is necessary to implement the control and audit of information systems continuously. In this regard, rapid technological development and challenges in the IT audit profession, how the audit can more quickly review the risks in the digital transformation environment, how to develop skills in terms of market challenges, how to adapt to global industry standards, especially in cyberspace, contributed to the development of the idea for writing this work. Therefore, the principal objectives of this paper are the identification of the quality factors of the audit of an information system, i.e., how the quality audit can contribute to ensuring the continuity of the organization's operations. Besides, this study aims to identify how the information system audit adds value to the organization and to analyze the benefits of the information system audit quality in order to maintain and preserve business continuity.

Keywords: information system, information system audit, IT audit, IT regulations, business continuity management

JEL Classification: M15

1. Introduction

Nowadays, business operations cannot be imagined without an information system. IT departments of individual organizations are no longer just business support, but also strategic partners of the management. Information technology (IT) value has been measured at various levels of analysis (Davern & Kauffman, 2010). In today's world, rules, standards, expectations, values, and risks are profoundly affected by the information technologies. Information is the most prominent assets while change, flexibility, speed and innovative thinking are sidekicks of it (Kayrak, 2014). The use of IT in making business decisions is expected to result in accurate, timely, precise and highly reliable information, the contents, and form of which is geared to the needs of management (Sacer & Oluic, 2013).

According to the newest Cisco VNI Report (CISCO, 2017), mobile data traffic has grown 18-fold over the past five years, which was primarily influenced by the explosive growth of on-demand mobile video traffic. No industry branch has undergone so many dynamic and comprehensive changes as information and communication technologies. According to that, the management of the organizations faces a new challenge: structural redefinition of the IT component in order to create plus value and to minimize IT risks through efficient management of all IT resources of the organization (Gheorghe, 2010).

Such a demanding, turbulent and dynamic ICT market needs to be regulated with the goal of protecting both resources and customers or consumers. Organizational information technology (IT) standards have become increasingly important for companies (Dittes, Urbach, Ahlemann, Smolnik, & Mueller, 2015). However, insights from practice indicate that employees tend to violate these standards, generating a need for governance and management mechanisms for the successful implementation in the organization. Standardization has become an established approach for organizations to coordinate and organize their resources and processes in order to ensure product and service quality and to raise work efficiency. Companies operating worldwide rely particularly heavily on standards to leverage economies of scale through uniform business processes. The importance of organizational standards for IT departments has increased steadily over time, due to the growth, complexity, and increasing costs of the organizational IT in almost all departments in large organizations.

The operation of information systems – as well as all systems – should be monitored, controlled and revised (Panian, 2001). In this regard, the question arises who will review it, how and what benefits a quality information system audit can bring to the organization. How will cloud solutions be revised? Who and how will blockchain be audited? No matter how dynamic the information technology market is, the requirements imposed on IT auditors are continually changing as well.

No data center is immune to incidents or disasters. Business continuity and disaster recovery were not topics most companies wanted to focus on. There was a lot of organizational resistance to spending the time and money necessary to develop a thorough and actionable plan (Snedaker & Rima, 2014). In recent years, awareness has been raised in organizations and understand that BCP / DRP is a business necessity. Organizations that have experienced certain unforeseen situations, incidents or catastrophes in their business have become more severe in terms of BCP / DRP. Financial services firms, which are now fully electronic, have relatively robust failover systems, backup scenarios, and the ability to run their business from any one of a number of worldwide locations (Snedaker & Rima, 2014).

The purpose of this paper is to identify the factors that influence the quality of the information system audit, in other words, how a quality audit of the information system can contribute to maintaining and preserving business continuity. The importance of IT audit quality is increasing over the years, as organizations continuously increase their IT investments,

and thus impose new requirements through different legal regulations. The goal of this paper, above all, is to identify the relevant factors of the quality of the information system audit. In this regard, the following research questions have been defined: i) What are the critical factors for quality of information system audit?; ii) How does the information system audit add value to the organization?; and iii) What are the benefits of the information system audit quality in order to maintain and preserve business continuity? In order to answer previously mentioned questions, a systematic literature review will be applied.

This paper is structured in a way that the first part presents the information system audit, followed by an overview of IT regulations, and then an overview of the area of business continuity management. In the second part, the methodology of a systematic literature review is given. Finally, results are provided using the narrative method.

2. Literature review

2.1. IT regulations

For many years and a decade, IT profession has been searching for the appropriate, world-recognized, specific, and at the same time sufficient general professional standards to describe and prescribe the best practices for the use of information technology (Spremic, 2017). Today's most commonly used standards and norms in informatics (CobiT, ITIL, ISO 27000 standards, PCI DSS, NIST, SANS, CMMI, etc.) are in line with the benefits that information systems can bring in business and according to the achievement of appropriate measurable goals of IT and business alignment. Most of these standards are complementary to each other, each has its advantages in distinct areas, so integrated approach is often used.

2.2. Information system audit

In order to verify that organizations in such a dynamic ICT market operate in accordance with the standards and whether they comply with the regulations, laws, and bylaws, it is necessary to undertake control continuously (Panian, 2001). No matter how dynamic the information technology market is, the requirements imposed on IT auditors are continually changing. Starting from the adequate management of IT projects, the obligations of assessment and management of IT risks, clear rules for procurement, management and contracting of IT resources, to adequate management of changes and upgrades, IT audits can contribute to ensuring more careful money spending, as well as ensuring the adequate system of internal control within the organization's information system.

The audit profession has changed over the years because inevitably it was necessary to monitor changes in the market (ISACA, 2017). Due to the dynamic modern environment, this profession must continue to develop at an even faster pace. IT auditors are expected to be innovative, to think about the future and not to be afraid of change. It is essential to understand that future leaders in IT audits must be open to developing skills beyond traditional IT risk management, as technology continues to synergize with emerging business expectations.

This is the reason why new technologies must be able to adapt and need to be actively managed. In this case, we should not forget about human resources, because only with human inputs all these technologies will not be a threat, but an advantage for technological advancement and development in the future.

On the basis of the above mentioned, it is evident that the rapid technological development and challenges in the IT audit profession to educate IT auditors about the latest technologies, how audit can become even agiler and quicker in order to review the risks in the digital transformation environment, how to develop skills in terms of market challenges, how

to adapt to global standards in industry, especially in the cyberspace, have contributed to the development of the idea for writing this paper, i.e. the desire to identify the factors of the IT audit quality with the aim of preserving the business continuity of the organization.

2.3. Business Continuity Management

Regardless of how simple or complex IT environment is, companies need to plan for business disruptions, which can range from a local power outage to a massive, regional event such as a tornado, hurricane, or earthquake. Some natural disasters can be predicted and even tracked, as was the case with Hurricane Katrina and Super Storm Sandy (among others), but other events are completely unexpected (Snedaker & Rima, 2014). The purpose of business continuity/disaster recovery is to enable a business to continue offering critical services in the event of a disruption and to survive a disastrous interruption to activities. Rigorous planning and commitment of resources are necessary to adequately plan for such an event (ISACA, 2015). Technological development, from virtualization to cloud services, has allowed organizations to spend their money more efficiently and to establish optimum backup recovery sites, with the aim of ensuring continuity of operations.

Business Continuity Management (BCM) is a management process which identifies possible internal and external threats/risks and their impact on business processes and provides a framework for organizational resilience (ISO 22301, 2012). Ensuring business continuity has become more difficult because of increasing threats, supply chain integration and dependency on complex information systems. BCM addresses operational continuity by concentrating on mission-critical business processes (Randeree, Mahal, & Narwani, 2012).

Figure 1. The lifecycle of BCM (BS 2599:1, 2006).

According to the international organization for standards (IS), BCM life cycle involves six elements including the business continuity program management, embedding competence an awareness in the culture of organization, understanding the organization, selecting business continuity options, developing and implementing a business continuity response, and exercising and testing the developed plans as shown in Figure 1. A comprehensive understanding of an organization and its fundamental processes ensures that the BCM's program is established according to the organization objectives (Torabi, Soufi, & Sahebjamnia, 2014).

Source: *(Torabi, Soufi, & Sahebjamnia, 2014)*

BCM has recently been defined as: holistic management process that identifies potential threats to an organization and the impacts to business operations that those threats, if realized, might cause, and which provides a framework for building organizational resilience with the capability for an effective response that safeguards the interests of its key stakeholders, reputation, brand and value-creating activities (Herbane, 2010).

3. Systematic Literature Review Methodology

This chapter employs a systematic literature review (SLR) in order to address the research topic. According to Ridley (2008), the multiple purposes of the literature review can be categorized as follows:

- it provides a historical background for research,
- it gives an overview of the current context in which research is situated by referring to contemporary debates, issues, and questions in the field,
- it includes a discussion of relevant theories and concepts which underpin research,
- it introduces relevant terminology and provides definitions to clarify how terms are being used in the context of own work,
- it describes related research in the field and shows how work extends or challenges this, or addresses a gap in work in the field and
- it provides supporting evidence for a practical problem or issue which research is addressing, thereby underlining its significance.

A systematic literature review is conducted in accordance with the steps adopted from Okoli (2015) and depicted in Figure 2. The steps of the systematic literature review are conducted through four phases: planning, selection, extraction, and execution. At the very beginning, the purposes for a systematic review are identified.

After identification of the purposes concerning the quality factors of information system audit, the draft protocol was developed. First, research questions are identified. After that, a search strategy is developed as well as the process of papers selection. Research questions that are identified are:

- RQ1: What are the critical factors for quality of information system audit?
- RQ2: How does the information system audit add value to the organization?
- RQ3: What are the benefits of the information system audit quality in order to maintain and preserve business continuity?

Figure 2. A Systematic Guide to Literature Review Development

Source: Okoli, 2015

Search strategy refers to the databases as well as search strings that will be used for publications search. To address research questions and with the aim of identification of information system audit quality factors, ISI Web of Science has been chosen for the search.

The first attempt to search the Web of science database did not result in the corresponding number of articles. The search included the strings "„factors" and „information system* audit"" to be found in the *Title*. Certain authors used the term „factors" and other authors used the term „determinants", but specific authors have published papers in general

what impacts the quality of the information system audit, but they did not call them factors. Therefore, it was decided that the string should be expanded, and then the analysis of all the obtained articles was made, with the aim of searching for factors.

In relation to that, in order to summarize the published papers related to the audit of information systems, a search of the Web of science – Core collection database was carried out. The search included the strings "*"information system * audit" OR "audit of information system * "OR" IT audit"*" to be found in the *Title*. The search was conducted on March 7, 2018. The result showed documents classified according to the following categories:

- 44 articles,
- 11 editorial materials,
- 2 proceedings papers and
- 2 reviews.

This analysis will cover 44 articles because they are scientific papers (2 proceedings papers are at articles category as well).

4. SLR Results Discussion

All 44 articles are reviewed in terms of objectives, methodology, and findings. For some of them, only abstract was available, so the conclusion is made based on it. The review is presented in the table which is given in Appendix 1 of this paper. The main conclusions of the literature review can be presented as follows:

- Based on the review of available scientific and academic databases, it has been concluded that very few studies and research have been conducted with this topic.
- The papers that dealt with the topic of the information system audit mostly used the qualitative research methodology.
- By literature review, in the context of the audit and control of information systems, the following items were analyzed: a) certification and audit process (Leem & Lee, 2004; Julisch et al., 2011); b) description of specific standard (Carlin & Gallegos, 2007): c) an influence of IT on audit process (Moorthy et al., 2010); d) approaches to assessing IT risk (Friedhoff & Mansouri, 2015), etc.

According to the above mentioned, and given that the primary goal was to identify the quality factors of the information system audit, it can be concluded that there were no papers that could help identify the critical factors of the information system audit. Bearing in mind the fact that within the first key initial search of the Web of Science database there were not identified articles related to the identification of the quality factors of information system audit, search of other databases was carried out, and five primary articles were identified that could help identify the quality factors of the information system audit: Havelka & Merhout (2007), Merhout & Havelka (2008), Pham et al. (2014), Francis (2011) and Freestone & Lee (2007).

By searching other sources, a small number of articles have been identified for researching this topic. By reviewing the literature, in the context of the audit and control of information systems, mostly there was analyzed the following:

- how the information system audit adds value to the organization,
- which attributes influence the quality of the information system audit,
- which factors are related to the IT audit carried out by internal auditors,

- how to improve the auditor's understanding of the quality of the audit, the competence of the auditor, and the independence of the auditor,
- perception of the quality of the audit from the perspective of the audit client and auditor, and others.

The term audit quality needs to be explained before proceeding. Audit standards imply that audit quality is achieved by the issuance of the ''appropriate'' audit report on the client's compliance with generally accepted accounting principles (Francis, 2011). It is important to keep in mind that the quality of the audit is perceived, and not directly observed. It is considered that this topic is not sufficiently theoretically and empirically explored, especially if we have in mind the complexity of the audit quality concept, or that there is no unique measure scale of indicators for measuring the quality of the audit.

As a first approximation of audit quality, we can think of audits as either meeting or not meeting minimum legal and professional requirements. Audit quality is inversely related to audit failures: the higher the failure rate, the lower the quality of auditing (Francis, 2004).

4.1. RQ1: What are the critical factors for quality of information system audit?

According to the analysis of primary documents, the following six key quality factors of an information system audit are selected:
1. Client (Auditee),
2. Audit Company (Auditor),
3. Audit Process and Methodology,
4. Audit Team Factors,
5. Target Process and Audit Scope,
6. Legislation and regulation.

1. Client (Auditee)

The client category included any factors that were characteristics of or dependent on the client (or auditee). Examples of factors in this category: expectations of the client, client support of the audit, and responsiveness of the client (Havelka & Merhout, 2007). The organizational factors of client, client-controlled category include any factors that were characteristics of or dependent on the client (or auditee), including management's support and adequacy of documentation. This category is where partnerships are critical for the ability of IT audit to influence how the client (i.e., auditee) cooperates during an audit (Merhout & Havelka, 2008). Indicators which could be used are the following: client size, client motivation, client expertise and style, customer relations, quality and responsiveness, honesty and openness, quantity of organizational changes, organizational restructuring, organizational ability to manage changes, client's understanding of the audit process (and the purpose of the audit), the completeness, timeliness and accuracy of data and information from the client (for example, through a database or query), etc.

2. Audit Company (Auditor)

A series of accounting scandals in the early 2000s, such as those at Enron and WorldCom in the United States have raised public concerns about audit quality. The auditors' responsibility is not exclusively to satisfy the needs of an individual client or employer. Decision makers, both within and outside an organization, use audited financial information with the confidence

that there are no material misstatements in the financial statements. Therefore, the auditors' responsibility is also to act in the public interest (Pham, Amaria, Bui, & Tran, 2014).

Factors influencing audit quality are still debated among researchers, regulators, and practitioners. Many different studies indicated that the key factors that affect competence and independence of the audit consist of audit firm size, audit firm factors (human resources management), industry expertise, having employment with audit client, competitive audit market, audit price, economic dependence, audit tenure, and provisions of non-audit services (Pham et al., 2014).

There are many classifications of an audit, such as external and internal audit, state and commercial audit, financial and IT audit, etc. In order to compete with each other, auditors/auditing companies seek to differentiate their services. As four biggest auditing companies proved that they provide the best audit services, they differentiated themselves and are called "big four" (Deloitte, KPMG, PWC and Ernst & Young). With the aim to select the best quality audit services comparing to the prices, clients usually check the audit firm size and the fact of the audit firm belongs to a worldwide network. Also, when choosing the auditing company, it is recommended to check audit company's industry expertise in the specific country, then competence of audit team, etc.

Indicators which could be used are the following: audit size, firm experience with client, industry expertise, computer-assisted auditing tools, audit company maturity, auditor tenure, resources, etc.

3. Audit Process and Methodology

The audit process represents the implementation of audit inputs, i.e., the testing procedures that are applied by the engagement team. These are the decisions and judgments made by auditors with respect to the planning, collection, and interpretation of evidence in order to meet the broad requirement of audit standards to collect sufficient competent evidence in support of the audit report (Francis, 2011).

The auditing organization or auditor must be fully aware of the conditions, challenges, and issues prevailing in the country, region and industry where the audit is to be conducted. The audit process can be broken down into the following audit phases: engagement activities, planning, a test of controls, substantive procedures, completion and reporting (Figure 3). While the figure suggests that these phases are sequential, they are actually quite iterative and interrelated in nature.

Figure 3. Major audit phases

Source: (Messier, Glover, & Prawitt, 2012)

There are many different audit methodologies, such as knowledge audit methodology, scan audit methodology, but the most used one is risk-based audit methodology. Risk-based IT auditing is an approach that focuses on analyzing risk applicable to the business. More precisely, RBA is an approach that focuses on the response of the organization to the risks it faces in achieving its goals and objectives. Unlike other forms of the audit, Risk-Based Auditing starts with business objectives and their associated risks rather than the need

for controls (Lovaas & Wagner, 2012). Through correlation between organization's risk and business objectives of the organization, auditing plan will lead to a more accurate, faster and more precise risk reduction programs. Therefore, the purpose of risk-based auditing is improving the efficiency and effectiveness of the audit (Mohammadi, Kalali, & Najafzadeh, 2014).

Indicators which could be used are the following: sufficient time is allocated to execute the audit, follow-up methodology is used, audit work processes and documentation quality, respect of professional commitments made to the client, quality of the relationship between the audit team and the client's staff, etc.

4. Audit Team Factors

Audit team factors consider knowledge of the process being audited, interpersonal skills, technical expertise, and experience level (Havelka & Merhout, 2007). Auditor competence and auditor independence are, among others, the most critical audit team factors. Competence, a significant factor for all industries, refers to possessing skills, knowledge, and expertise through an adequate level of education and experience (Pham et al., 2014). It is a primary factor for improving and maintaining service and product quality. Competence enables the auditor to detect material misstatements contained in the financial statements. If auditors are incompetent, they will be less likely to detect weaknesses and irregularities in the information system of the auditee.

The auditor should be independent of the client company so that any relationship between them will not influence the audit opinion. The auditors are expected to give an unbiased and honest professional opinion on the financial statements to the shareholders. According to the IIA Glossary (IIA, 2018), auditor independence is the freedom from conditions that threaten the ability of the internal audit activity to carry out internal audit responsibilities in an unbiased manner.

The IT audit personnel, social and interpersonal skills category include factors that are dependent upon the individuals performing the IT audit tasks. Some of the factors in this category are: communication skills, willingness and ability to change, and motivation/enthusiasm (Merhout & Havelka, 2008).

Since the audit of information systems is an audit that requires specific skills, other technical proficiency and professional values of the audit team members should be considered, most importantly. Also, there should be considered auditors' certification (CISA, ISO 27001, CIA, local certificates), then specific IT knowledge (databases administration, networks, virtualization, cloud, etc.) as well as the education on a continuous level.

The indicators that could be used are the following: technical competencies, willingness to learn, team cohesiveness, social skills, experience, professional skepticism, auditor motivation, accountability, ethical culture, auditor independence, auditor objectivity, ethics, etc.

5. Target Process and Audit Scope

In an integrated environment, the audit scope is a critical point to be considered since precise and defined boundaries are no longer available. The audit scope, namely, physical location, organizational units, activities, and processes define the extent and boundaries of an audit (Domingues, Sampaio, & Arezes, 2011). The process or system category included any factors based on the process or system being audited, i.e., the target of the audit, and specific considerations for the specific audit "project" being performed. Some examples of process or system factors are: clearly defined project scope, system complexity and type, amount of

manual versus automation in the process, and the level of documentation for the process or system (Merhout & Havelka, 2008).

The auditor is required to precisely define the targeted process (and/or activity) which presents the audit object, as well as the complete environment and period which will be covered by the audit. Audit scope is defined as the amount of time and documents which are involved in an audit, is an essential factor in all auditing. The audit scope, ultimately, establishes how deeply an audit is performed. It can range from simple to complete, including all company documents.

The principal objectives of the audit need to be clearly defined and planned. Within audit of information systems, there should be defined complexity and type of applications, systems, transactions and organizational units that are audited, as well as IT environment. Audit scope could include well-organized standards and processes, correctness and reliability of data within the system, system diagrams, etc.

The indicators that could be used are the following: audit methodology, time sufficiency, review of field work, audit procedures, fieldwork conduct, due care, quality commitment, ethical standards, representative sampling, adequate testing, etc.

6. Legislation and regulation

The institutional setting in which audits are conducted refers to the legal system in a country that determines an auditor's legal responsibilities, as well as the broad set of institutions that regulate auditing practices (Francis, 2011). Each country has its unique institutions that are directly involved in the regulation and oversight of auditors and companies. It is important to bear in mind different industry regulation, such as banking industry regulation, public sector, etc.

Since two main documents used the quantitative methodology as a research methodology, it is recommended that quantitative methodology is used in a future analysis of identified quality factors of an audit of an information system.

4.2. RQ2: How does the information system audit add value to the organization?

Merhout & Havelka (2008) provided answers to the second research question, as well. Audit experts state that they should adopt the roles of consultant, counselor and liaison instead of being considered as a "police". By following a sound information system audit methodology focusing on success factors (e.g., consistent communications with IT management), an organization can deliver high quality IT audits that meet the requirements of a risk-based assurance program while simultaneously delivering value-added governance services to the organization. These value-added services can contribute to a quality IT audit process because of the partnership nature of the IT auditor-IT management (i.e., the auditee) relationship that will develop over time. In short, an IT governance partnership can be a win-win scenario for the entire enterprise (Merhout & Havelka, 2008).

4.3. RQ3: What are the benefits of the information system audit quality in order to maintain and preserve business continuity?

Freestone & Lee (2007) provided the answer to the third question: What are the benefits of the information system audit quality in order to maintain and preserve business continuity? One of the primary objectives of BCM auditing is to evaluate an organization's processes and related documents, in order to identify opportunities to improve an organization's operations and performance. Furthermore, the audit should examine the organization's current BCM

methodology to determine if it produces the desired risk control outcomes effectively (Freestone & Lee, 2007).

5. Conclusion

The purpose of this paper is to improve the understanding of IT audit quality related to the business continuity through critical review utilizing a systematic literature review (SLR) methodology. SLR is conducted following the steps adopted from Okoli (2015). The narrative synthesis method was used with the descriptive methodology. Since it was not possible to identify precise answers to the research questions, the number of analyzed studies was expanded with other papers which are found in other databases by using the same string. On the basis of that analysis, there were identified five key documents that could offer answers to our research questions: Havelka & Merhout (2007), Merhout & Havelka (2008), Pham et al. (2014), Francis (2011) and Freestone & Lee (2007).

The primary objective was to identify the critical factors for quality of information system audit, which was the first research question. The answer to that question provided Havelka & Merhout (2007) and Francis (2011). The following six key quality factors of an information system audit are selected: Client (Auditee), Audit Company (Auditor), Audit Process and Methodology, Audit Team Factors, Target Process and Audit Scope, and Legislation and regulation.

An Audit Client (Auditee) is a person, organizational unit(s), or legal entity that is being audited. The term "Auditor" is used to refer to the person or persons conducting the audit, usually the engagement partner or other members of the engagement team, or, as applicable, the firm (IAASB, 2016). To act as an auditor, a person should be certified by the authorized institution. The Audit process represents the implementation of audit inputs, i.e., the testing procedures that are applied by the engagement team (Francis, 2011). The audit process can be broken down into the following audit phases: engagement activities, planning, a test of controls, substantive procedures, completion and reporting. Audit team factors consider knowledge of the process being audited, interpersonal skills, technical expertise, and experience level (Havelka & Merhout, 2007). The audit scope is a critical point to be considered since precise and defined boundaries are no longer available. The institutional setting in which audits are conducted refers to the legal system in a country that determines an auditor's legal responsibilities, as well as the broad set of institutions that regulate auditing practices (Francis, 2011). An IT governance partnership can be a win-win scenario for the entire enterprise if the audit experts have the role of consultant, advisor, and associate of the organization instead of being considered as "police" (Merhout & Havelka, 2008). Finally, the audit should examine the organization's current BCM methodology to determine if it produces the desired risk control outcomes effectively (Freestone & Lee, 2007).

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Appendix 1. Review of Collected Papers from Primary Sources

Reference	Title	Objective(s)	Methodology	Result/s
Brazel, Joseph F. & Agoglia, Christopher R. (2007)	An examination of auditor planning judgements in a complex accounting information system environment	In this study, they investigate the effects of CAS competence and auditor AIS expertise on auditor planning judgements in a complex AIS environment.		They find that both CAS competence and auditor AIS expertise significantly affected auditor risk assessment. More importantly, auditors' AIS expertise levels moderated their ability to effectively incorporate CAS evidence into their planned substantive testing. Their results suggest auditors' AIS expertise can play a significant role in complex AIS settings and in their ability to compensate for CAS competence deficiencies.
von Solms, B (2005)	Information Security governance: COBIT or ISO 17799 or both?			
Sutton, Steve G., Hampton, Clark, Khazanchi, Deepak, & Arnold, Vicky (2008)	Risk analysis in extended enterprise environments: Identification of critical risk factors in B2B e- commerce relationships	The focus of this study is to identify the critical risk factors that can be used to assess the impact of B2B e- commerce on overall enterprise risk.	They apply the Khazanchi and Sutton (2001) framework for B2B e- commerce assurance as the organizing conceptual model for the study. The framework focuses on three primary risk components: (1) technical risks, (2) application-user risks, and (3) business risks. To identify a critical set of B2B risk factors, structured focus groups applying a nominal group technique were conducted with three internal constituency groups (corporate groups consisting of IS security, internal IT audit, and e- commerce development managers) and two external constituency groups (e- commerce consultants and external IT auditors).	Tests of consistency between the groups confirm strong agreement on the identified critical B2B risk factors. Tests were also conducted on participant groups' perceived relative importance of the critical B2B risk factors. The only substantial inconsistencies were between the internal constituency groups and the e- commerce consultants' group for the business risk factors. This would appear to indicate that the priorities of internal groups might be different from the e-commerce consultants who appear more focused on management support of projects than on active involvement of trading partner staff with systems integration.

Leem, CS, & Lee, HJ (2004)	Development of certification and audit processes of application service provider for IT outsourcing	In this paper, they discuss certification and audit processes of ASP services.	Their research included: first, a survey of 35 Korean companies' awareness, advantages and concerns on ASP services. This formed the base of their research. Second, the ASP certification framework and processes required to verify the reliability of ASP services were summarized and case applications were also outlined.	Finally, they proposed an audit process aimed at improving the efficiency of ASP services.
Chang, She-I, Yen, David C., Chang, I-Cheng, & Jan, Derek (2014)	Internal control framework for a compliant ERP system	This study develops an internal control framework that can be applied within an enterprise resource planning (ERP) system.	A literature review is first conducted to examine the necessary forms of internal control in information technology (IT) systems. The control criteria for the establishment of the internal control framework are then constructed. A case study is conducted to verify the feasibility of the established framework. This study proposes a 12-dimensional framework with 37 control items aimed at helping auditors perform effective audits by inspecting essential internal control points in ERP systems.	The proposed framework allows companies to enhance IT audit efficiency and mitigates control risk. Moreover, companies that refer to this framework and consider the limitations of their own IT management can establish a more robust IT management mechanism.
Julisch, Klaus, Suter, Christophe, Woitalla, Thomas, & Zimmermann, Olaf (2011)	Compliance by design - Bridging the chasm between auditors and IT architects	This article describes a generalized audit process.	According to their experience with this process, there is a risk that material deficiencies remain undiscovered when said simplifying assumptions are not satisfied. To address this risk of deficiencies, the article compiles thirteen control patterns, which e according to their experience e are particularly suited to help information systems satisfy the simplifying assumptions.	As such, use of these proven control patterns makes information systems easier to audit and IT architects can use them to build systems that meet audit requirements by design. Additionally, the practices and advice offered in this interdisciplinary article help bridge the gap between the architects and auditors of information systems and show either role how to benefit from an understanding of the other role's terminology, techniques, and general work approach.
Carlin, Anna, & Gallegos, Frederick (2007)	IT audit: A critical business process	This paper investigates the co-existence of and complementary use of COBIT and ISO 17799 as reference frameworks for Information Security governance.	The investigation is based on a mapping between COBIT and ISO 17799 which became available in 2004, and provides a level of 'synchronization' between these two frameworks.	The investigation is based on a mapping between COBIT and ISO 17799 which became available in 2004, and provides a level of 'synchronization' between these two frameworks.

Akoka, J., & Comyn-Wattiau, I. (1996)	A knowledge-based system for auditing computer and management information systems	In this paper, they present an audit expert system, called INFAUDITOR, aiding the audit process related to management information systems.		
Herath, Hemantha S. B., & Herath, Tejaswini C. (2014)	IT security auditing: A performance evaluation decision model	Given the various costs, including opportunity costs, the problem of deciding when to undertake a security audit and the design of managerial incentives becomes an important part of an organization's control process.		In view of these considerations, this paper develops an IT security performance evaluation decision model for whether or not to conduct an IT security audit. A Bayesian extension investigates the impact of new information regarding the security environment on the decision. Since security managers may act in an opportunistic manner, the model also incorporates agency costs to determine the incentive payments for managers to conduct an audit. Cases in which the agency model suggests that it is optimal not to conduct an IT security audit are also discussed.
Cruz-Correia, Ricardo, Boldt, Isabel, Lapao, Luis, Santos-Pereira, Catia, Rodrigues, Pedro Pereira, Ferreira, Ana Margarida, & Freitas, Alberto (2013)	Analysis of the quality of hospital information systems audit trails	Audit Trails (AT) are fundamental to information security in order to guarantee access traceability but can also be used to improve Health Information System's (HIS) quality namely to assess how they are used or misused. This paper aims at analyzing the existence and quality of AT, describing scenarios in hospitals and making some recommendations to improve the quality of information.	The responsible of HIS for eight Portuguese hospitals were contacted in order to arrange an interview about the importance of AT and to collect audit trail data from their HIS. Five institutions agreed to participate in this study; four of them accepted to be interviewed, and four sent AT data. The interviews were performed in 2011 and audit trail data sent in 2011 and 2012. Each AT was evaluated and compared in relation to data quality standards, namely for completeness, comprehensibility, traceability among others. Only one of the AT had enough information for us to apply a consistency evaluation by modelling user behavior.	The interviewees in these hospitals only knew a few AT (average of 1 AT per hospital in an estimate of 21 existing HIS), although they all recognize some advantages of analyzing AT. Four hospitals sent a total of 7 AT – 2 from Radiology Information System (RIS), 2 from Picture Archiving and Communication System (PACS), 3 from Patient Records. Three of the AT were understandable and three of the AT were complete. The AT from the patient records are better structured and more complete than the RIS/PACS.

Moorthy, M. Krishna, Seetharaman, A., Mohamed, Zulkifflee, Gopalan, Meyyappan, & San, Lee Har (2011)	The impact of information technology on internal auditing	This paper evaluates the role of information technology and how it affects internal audit process in the organization.		
Gordon, Steven R., & Tarafdar, Monideepa (2010)	The IT Audit That Boosts Innovation	---------		
Pathak, Jagdish, & Lind, Mary Robinson (2010)	An E-Business Audit Service Model in the B2B Context	This research studies E-business audit as a specialized service rendered in an information technology intensive environment.	A service model is used to research the E-business audit context.	A field study of information technology auditors showed that both knowledge of the business processes and of the technologies were critical for them to render reliable and accurate E-business audit findings. The results showed the need for higher training levels in advanced IT methods and tools for technology auditors in rendering IT audit judgments for the business-to-business (B2B) context.
Millard, Fiona B., Thistlethwaite, Jill, Spagnolo, Chris, Kennedy, R. Lee, & Baune, Bernhard T. (2008)	Dementia Diagnosis: A Pilot Randomised Controlled Trial of Education and IT Audit to Assess Change in GP Dementia Documentation	This trial aimed to test whether education and audit can change documentation of dementia by general practitioners (GPs).	They measured the number of new dementia diagnoses documented and Mini Mental State Examinations (MMSEs) performed following the interventions of education and audit, using electronic data for audit and outcomes. GPs in Mackay were randomly assigned to the interventions of either an educational workshop or education combined with audit of their documented dementia diagnoses and MMSE performed in electronic medical records.	The results were compared with a control group of GPs in Townsville. Together with education, audit significantly improved documentation of dementia compared with education alone and a control group. They developed a data extraction tool for Medical Director (MD) software producing a report of dementia diagnoses, MMSE tests and practice population at risk for dementia.
Tryfonas, Theodore, & Keamey, Bob (2008)	Standardising business application security assessments with pattern-driven audit automations	In this paper they explore the use of security patterns for audit automation and they implement them as a means of supporting its standardization within integrated business application systems.		They argue that through appropriate standardization of the automation requirements such cross-system implementation may be possible and they propose as a means of standardization the use of security design patterns.

Allinson, C (2001)	Information systems audit trails in legal proceedings as evidence	A brief history of audit trails is given with requirements for such audit trails beyond the year 2000. The Queensland Police Service (QPS), Australia, is used as a major case study. Information on principles, techniques and processes used, and the reason for the recording, storing and releasing of audit information for evidentiary purposes have been studied.	To assist in determining current practice in the Australian Commonwealth and State Governments the results of an Australia wide survey of all government departments are given and contrasted to the major study for QPS. Reference is also made to the legal obligations for authorization of audit analysis, expert witnessing and legal precedence in relation to court acceptance or rejection of audit information used in evidence.	It is shown that most organizations studied generate and retain audit trails but the approach is not consistent nor is it comprehensive. It is suggested that these materials would not withstand a serious legal challenge.
Dzuranin, Ann C., & Malaescu, Irina (2016)	The Current State and Future Direction of IT Audit: Challenges and Opportunities	Embracing the spirit of the Pathways Commission's focus of enhancing the value of practitioner/educator exchanges, the inaugural Journal of Information Systems Conference (JISC) brought together 30 academic researchers and 15 practitioners to discuss the current state and the future direction of information technology (IT) audit research and practice.	Panelists, comprised of practitioners from government, public accounting, and industry, provided insight into current IT audit issues. The first panel discussed the role of IT auditors in helping organizations meet compliance requirements and ensuring that information systems add value to the organization. The second panel addressed the future of IT audit in a world of advanced analytics and emerging technologies. Although the panels addressed separate topics, common themes emerged from the discussions.	Issues facing the IT audit professions as a result of the increasing volume of data available, coupled with changing technology and increasing regulatory requirements, underscored much of the discussion. Big Data, compliance, and emerging technology issued were addressed from both internal and external audit perspectives. This commentary provides a review and synthesis of the information presented during panel discussions at the conference and suggests potential research questions.
Clark, Scott R., Wilton, Lisa, Baune, Bernhard T., Procter, Nicholas, & Hustig, Harry (2014)	A state-wide quality improvement system utilising nurse-led clinics for clozapine management	This paper describes the implementation of a state-wide clozapine management system to improve the quality of care for those with treatment-resistant schizophrenia. This intervention includes standardized forms, computer-based monitoring and alerting and nurse-led clinics for stable consumers.	Methods used during system development included medical record and clinical information system audit, consensus review of available evidence and qualitative review of existing forms, systems and stakeholder opinion.	Nurse-led monitoring safely reduced medical outpatient appointments by 119 per week in metropolitan public clinics. In the 15 months following the implementation of all interventions, mortality associated with physical illness not related to malignancy was reduced from an average of 5 deaths per year to one.

Mahzan, Nurmazilah, & Veerankutty, Farida (2011)	IT auditing activities of public sector auditors in Malaysia	This study investigates the IT practices of the public sector auditors in Malaysia. They examine IT evaluation based on IT audit objectives, organizational characteristics, competency of auditor and usage of Computer Assisted Audit Tools and techniques (CAATTs).	Self-administered questionnaires were mailed to 400 public sector auditors providing a usable sample size of 73.	The results show that application processing control and data integrity, privacy and security control were the most frequent evaluations performed by public sector auditors. The most frequent IT audit objective is the evaluation of compliance with policies, procedures and evaluation of internal control and these objectives are performed differently in different divisions. CAATTs have been used most frequently as a problem solving aid. Several appealing patterns emerged from the eight regression models.
Vasil'ev, R. B., Kalyanov, G. N., & Levochkina, G. A. (2010)	Directions of strategic IT consulting	The role of strategic IT consulting in a consulting service lifecycle is determined. The practical issues of its basic directions such as strategic IT audit, IT strategy development, IT service organization, and transfer to outsourcing are discussed.		
Gallimore, A (1996)	A public library IT strategy for the millennium	Argues that UK public libraries need to give priority to information technology (IT) if they are to continue as the main point of access for the general public seeking information.		Notes how these elements of the IT strategy were embodied in a coherent document for wider dissemination.
El-Temtamy, Osama, Majdalawieh, Munir, &	Assessing IT disaster recovery plans The case of publicly listed firms	The purpose of this paper is to assess information technology (IT) disaster recovery plans (DRPs) in publicly listed companies on Abu	The authors surveyed publicly listed companies on the ADX using a questionnaire adapted from past research papers as well as from audit	The majority of the respondents reported having a DRP, and a significant number of the respondents reported that their top organization's IT system was logical risk followed closely by power and network connectivity loss
Pumphrey, Lela (2016)	on Abu Dhabi/UAE security exchange	Dhabi securities exchange (ADX) in the United Arab Emirates. The authors assessed, among other things, DRP preparedness, documentation, employees' preparedness and awareness and the most significant physical and logical risks that pose the most threads to drive the development of the DRP, etc.	programs published by the Information Systems Audit and Control Association. The surveys were completed through interviews with middle and senior management familiar with their firm's IT practices.	as the second highest physical risk. The most highly ranked consequence of an IT disaster was loss of confidence in the organization.

Gillani, Saira, & Ko, Andrea (2015)	Incremental Ontology Population and Enrichment through Semantic-based Text Mining: An Application for IT Audit Domain	The authors' paper deals with the challenges and possible solutions for semi-automatic ontology enrichment and population.	ProMine has two main contributions; one is the semantic-based text mining approach for automatically identifying domain-specific knowledge elements; the other is the automatic categorization of these extracted knowledge elements by using Wiktionary. ProMine ontology enrichment solution was applied in IT audit domain of an e-learning system.	After ten cycles of the application ProMine, the number of automatically identified new concepts are tripled and ProMine categorized new concepts with high precision and recall.
Friedhoff, Jerry, & Mansouri, Mo (2015)	Monitoring IT operational risks across US capital markets	This paper suggests an approach to assessing IT risk within the operational risk context using an incident-based method for monitoring operational IT risk across an extended enterprise based on the Information Systems Audit and Control Association risk IT framework.	The proposed monitoring methodology is illustrated with an example from an extended enterprise within the US capital market.	Observations on the approach are also discussed and potential failure research is outlined.
Spremic, Mario, Bajgoric, Nijaz, & Turulja, Lejla (2013)	Implementation of IT governance standards and business continuity management in transition economies: The case of banking sector in Croatia and Bosnia and Herzegovina	Over the past decade business continuity management (BCM) has been treated mainly from either technology or planning perspective. This paper goes a step further and considers BCM from the IT governance view. In addition, the standards and legislation activities that help in that sense are evaluated. Implementation of industry best practices standards and processes such as ITIL and CobiT combined with other IT-related solutions can deliver substantial risk reduction and reduce business risks and result with reduced system downtime.	The cases of the implementations of main information technology (IT) standards in the banking sector of Croatia and Bosnia- Herzegovina from those two perspectives are explored.	

Lee, ChulSoo, Hong, Seng-phil, Kang, Sungmin, & Kim, Jaehyoun (2009)	The Study on the Information Security Audit Guideline for SCADA System	This research provided the basis of quality audit by suggesting information security architecture and information security audit framework and audit guideline for control system audit.		
Allinson, C (2002)	Information systems audit traits; An Australian government survey	A brief definition of information systems audit trails is given, with emphasis on national and international standards requirements. Aspects of Australian privacy legislation are discussed.	Detail and results of an Australia wide survey of all government departments is given and contrasted with particular results of a survey conducted by the Australian Commonwealth Privacy Commission four years previous.	It is shown that most organizations studied generate and retain audit trails but the approach is not consistent nor is it comprehensive. Within a four year period there is evidence to suggest that government organizations are increasingly more inclined to generate audit trails. It is also suggested that due to the inadequate and non-compliant security processes and procedures these materials would not withstand a serious legal challenge.
Gallegos, F, & Looho, A (2000)	Is audit training needs for the 21st century: A selected assessment	This paper explores the training needs of a selected population of Information Technology professionals, the information systems auditor.	Through an electronic survey, information has been gathered about the training needs and priorities and resources of this field.	The results of this paper show the level and areas of need in information audit, control and security education. It provides a baseline for other surveys to be initiated within geographic areas. Universities, working in partnership with industry, government and professional associations can help identify such training needs and in turn, offer coursework or certificate programs to help develop the information systems audit, control and security professional of the present and future.
Strous, L (1998)	Audit of information systems: The need for cooperation	This paper will give an introduction to the different aspects of it – auditing in general and will demonstrate the difficulties that it – auditors face when, for example, auditing an electronic commerce system. It will indicate the need for co-operation and it will be concluded by suggesting solutions for the auditors' problems.		

Nuijten, Arno, Keil, Mark, van der Pijl, Gert, &	IT managers' vs. IT auditors' perceptions of risks: An actor-observer asymmetry perspective	In this study, they draw upon the actor-observer asymmetry perspective to understand	Through a quasi experiment with 76 employees of a financial institution, they found that IT managers and IT	They found that IT managers and IT auditors showed the expected actor-observer differences. Implications for both research and practice are discussed.
Commandeur, Harry (2018)		differences in IT managers' vs. IT auditors' perceptions of risks.	auditors showed the expected actor-observer differences	
Barkhi, Reza, & Kozlowski, Stephen (2017)	ERP in the Classroom: Three SAP Exercises Focused on Internal Controls	Three short exercises are presented that introduce certain functional aspects of Enterprise Resource Planning (ERP) software. The objective is to provide students with an introduction to the functionality that is incorporated in a typical ERP software solution that supports an evaluation of internal controls and segregation of duties as part of the Information Technology Audit (IT Audit) function.	They have developed three hands-on step-by-step exercises using a widely implemented ERP system (i.e., SAP) and provide access to SAP on the cloud so that students can learn how to verify internal controls embedded in the system and identify control weaknesses such as a lack of segregation of duties.	
Proano Escalante, Rodrigo Arturo, Saguay Chafla, Ciro Napoleon, Jacome Canchig, Segundo Bolivar, & Sandoval Zambrano, Fanny (2017)	Knowledge based systems as an aid in information systems audit	The objective of this article is to give a general idea of the characterization and use of knowledge based systems, the way they are implemented and their application to the audit of information systems as a tool to help the opinion issue at the moment of realization of an audit.		

Putri, Mayang Anglingsari, Lestari, Vivin Ayu, & Aknuranda, Ismiarta (2017)	Audit of Information Technology Governance Using COBIT 4.1: Case Study in PT. XY	The purpose of this study is to conduct an audit of IT governance based on the four domains in the COBIT 4.1. framework such as Plan and Organize (PO), Acquire and Implement (AI), Deliver and Support (DS), and Monitor and Evaluate (MO). COBIT 4.1 is oriented on how to link business goals with IT goals, providing metrics and maturity models to measure achievement, and identifying the associated responsibilities of business and IT process owners.		This study contributes to the results of the evaluation and recommendations for the improvement that can be applied to PT.XW so that the company can make the IT infrastructure development planning procedure in accordance with COBIT 4.1 domain. In addition, this study also provides a procedure to evaluate the IT governance process in an enterprise based on COBIT 4.1 framework.
Tarek, Menna, Mohamed, Ehab K. A., Hussain, Mostaq M., & Basuony,	The implication of information technology on the audit profession in developing country	This study aims to explore the impact of implementing IT on the auditing profession in a developing country, namely, Egypt.	This study uses both quantitative and qualitative data. A survey of 112 auditors, representing three of the Big 4 audit firms as well as ten local audit firms in Egypt, is used to gather	The findings of this study reveal that auditors' perception regarding client's IT complexity is significantly affected by the use of IT specialists and IT expertise of the auditors. Besides, they perceive that the new audit applications' importance and the extent of their usage are
Mohamed A. K. (2017)	Extent of use and perceived importance		preliminary data, and semi-structured interviews are conducted to gather details/qualitative-pertained information. A field-based questionnaire developed by Bierstaker and Loww (208) is used in this study. This questionnaire is used first in conducting a pre-test, and then, the questionnaire for testing the final results is developed based on the feedback received from the test sample.	significantly affected by the IT expertise of the auditors. The results also reveal that auditors' perception regarding the client's IT is not affected by the control risk assessment. However, the auditors perceive that the client's IT is significantly affected by electronic data retention policies. The results also indicated that the auditors' perception regarding the importance of the new audit applications is not affected by the client's type of industry. The auditors find that the uses of audit applications as well as their IT expertise are not significantly affected by the audit firm size. However, they perceive that the client's IT complexity as well as the extent of using IT specialists are significantly affected by the audit firm size.

			Based on a sample of 285 internal and external auditors, their results suggest that, after controlling for mandatory Gas usage, perceived threat negatively influences usage and perceived usefulness, whereas the system problems construct negatively influences perceived usefulness and perceived ease of use.	Furthermore, their findings indicate that the effect of system problems is fully mediated by perceived usefulness and perceived ease of use, whereas the effect of perceived threat is partially mediated by perceived usefulness. Finally, their results indicate that the effect of perceived threat on GAS usage is stronger for internal auditors than external auditors, suggesting that the effect of inhibitors can vary by position.
Henderson, David L., III, Bradford, Marianne, & Kotb, Amr (2016)	Inhibitors and Enablers of GAS Usage: Testing the Dual Factor Theory	The purpose of this study is to investigate the enablers and inhibitors of generalized audit software (GAS) usage.		
Cram, W. Alec, & Gallupe, R. Brent (2016)	A Method to Evaluate Information Systems Control Alignment	They address this challenge by operationalizing a method to evaluate control alignment within IS processes.		The results ca aid in determining the degree of complementarity between IS controls, organizational, staff and process characteristics.
Goosen, R. (2016)	The development of an integrated IT risk assessment questionnaire for internal auditors' use	This article proposes to develop an integrated IT risk assessment questionnaire based on certain updated IT and risk control framework to assist the internal auditor in evaluating high level IT control risk areas in an effective manner, whilst complying with the latest framework requirements and also taking emerging technology risks into consideration.		
Kim, Hyo-Jeong, Kotb, Amr, & Eldaly, Mohamed Khaled (2016)	The use of generalized audit software by Egyptian external auditors The effect of audit software features	The purpose of this paper is to explore: the actual usage of generalized audit software (GAS) features among Egyptian external auditors, through the technology acceptance model (TAM); how the conceptual complexity of GAS features impact its actual usage, and what factors influencing the GAS use by Egyptian external auditors.	External audit professionals at 12 international audit firms, including the Big 4 and eight medium-sized firms, in Egypt were surveyed.	The results show that the basic features including database queries, ratio analysis, and audit sampling were higher in GAS use, perceived usefulness, and perceived ease of use among Egyptian external auditors than the advanced features: digital analysis, regression/ANOVA, and data mining classification. The structural equation modelling analysis by GAS features suggests that perceived ease of use has a stronger effect on GAS use when the conceptual complexity of GAS features is high. The analysis also support that the use of GAS by Egyptian external auditors is more affected by co-worker, supervisor, or organization through perceived usefulness, but not by job relevance, output quality, and result demonstration.

		Auction participants, academic researchers and the popular press continue to express concerns about shill bidding in online auctions. However, the market makers (auction websites) do not behave as if they view shill bidding as a significant risk. Further, important questions about shill bidding remain unanswered: how easily sellers are able to shill bid, how readily such actions can be detected by the market maker or bidding community, whether shill bidding results in significant economic gains, and which shill strategies are most effective.	They report the results of nine weeks of online auction trading.	They found that a price premium of between 16% and 44% can be achieved by shill bidding. Importantly, shill bidding is quite easy to implement and neither the market maker nor bidders showed any indication that they noticed. They conclude that market makers make a careful re-evaluation of the risks of shill bidding, since only they are in a position to take meaningful action to prevent it from occurring.
Nikitkov, Alexey, & Bay, Darlene (2015)	Shill bidding: Empirical evidence of its effectiveness and likelihood of detection in online auction systems			
D'Onza, Giuseppe, Lamboglia, Rita, & Verona, Roberto (2015)	Do IT audits satisfy senior manager expectations? A qualitative study based on Italian banks	This paper aims to analyses the relationship between the senior management and the information technology (IT) auditing undertaken in Italian banks, focusing specifically on the internal IT auditing. The purpose of this paper is to investigate senior executives' expectations regarding IT auditing, the techniques IT auditors apply to meet these expectations, the degrees to which senior managers are satisfied with the auditing and the expectation gap.	They conducted 22 interviews with senior managers and IT auditors of seven Italian banks, comprising large and small financial institutions, to gain data for their analysis.	They found that overall, the IT auditors' contributions satisfy senior managers, even though they still see room for improvement. They expected more support for the IT governance processes, specifically for the alignment between IT investments and business needs and between IT risk management and the value that IT resources provide. In addition, they want IT auditors to focus more strongly on IT security. To meet these expectations, IT auditors would have to improve their technical and non- technical skills. These skills will allow them to expand their activities, to be more proactive and to take on effective roles in IT governance processes.
Marx, B., & Ravjee, H. (2015)	An analysis of the evolving role of information technology with respect to selected standards and its impact on internal audit	This study investigated whether the King III report, Information Systems Audit and Control Association (ISACA) standards and Institute of Internal Audit (IIA) standards assist the internal audit function in addressing the impact of information technology	This was performed by way of a literature study on the internal audit function and the selected standards and corporate governance framework, the role of information technology in both the organization and the internal audit function, as well as an	The study identified an alignment of the key principles and elements identified in the King III report, ISACA standards and IIA standards, as well as support for IT- related reviews. The comparative analysis performed resulted in the formulation of key internal audit success factors, which compared favorably to those identified in the literature review. The study indicated that the King III report, ISACA

		on the organization and, as a result, the internal audit function itself.	empirical study detailing a comparative analysis of the King III report, ISACA standards and IIA standards, utilizing key success factors.	standards and IIA standards assisted the internal audit function by addressing IT-related risks, controls and governance elements.
Padayachee, L. G., & de Jager, H. (2015)	Integrated auditing - an internal audit perspective	An integrated audit approach entails an international audit design process that cohesively combines business process auditing and information technology (IT) auditing into a single, coordinated effort. However, due to the continuing influence of longstanding methods of performing audits, the internal auditing fraternity has been slow to evolve, neglecting to train internal auditors who are confidently able to perform audits that combine both the business process audits and IT audits into one seamless audit.		This study found that although holders of the Certified Internal Auditor qualification, and other members of the IIA are perceived to have mastered the theoretical knowledge provided by the CIA certification programmer and other training courses, the manner in which they perform audits does not demonstrate the practical application of this knowledge.
Stanciu, Nicoleta (2013)	Importance of event log management to ensure information system security	This article presents an overview of the event logs as part of information system audit, their importance, how to analyze them to assess the effectiveness of controls, the security log management what is the process for generating, transmitting, storing, analyzing, and disposing of computer security log data. It presents a generic Security Information and Event Management (SIEM) tool that collect event logs generated by various sources, such as security software logs, operating system logs and application log, correlate and		

		analyze aggregated and normalized security event logs, in centralized manner. Also, it highlights idea to need the finding an interoperability standard format and new methods for log normalization.		
Gantenbein, D, & Deri, L (2002)	Categorizing computing assets according to communication patterns	They propose to complement basic network-based discovery techniques with the combined log information from network and application servers to compute an aggregate picture of assets, and to categorize their usage with data-mining techniques according to detected communication patterns.		
Merhout, J. W., & Havelka, D. (2008)	Information Technology Auditing: A Value- Added IT Governance Partnership between IT Management and Audit	Primary factors that affect the quality of an IT audit from the perspective of project management	Qualitative research Focus groups The resulting initial model consisted of five categories of factors: Client-related, Target Process or System, IT Audit Personnel, IT Audit Organization, Audit Process/Methodology are refined and expanded into: 1. Audit Team Factors 2. Audit Process and Methodology Factors 3. Client-Controlled Organizational Factors 4. IT Audit-Controlled Organizational Factors 5. IT Audit Personnel Technical Competency Factors 6. IT Audit Personnel Social and Interpersonal Factors 7. Enterprise and Organizational Environment Factors 8. Target Process and System Factors	Value-added benefits of IT audits 1. Improved return on investment in information technology through improved IT governance 2. Using audit documentation to improve operational efficiency through business (and IT) process reengineering or improved business process management 3. Using audit observations to improve risk mitigation through Enterprise Risk Management (ERM) awareness 4. Improved Business Continuity Planning and associated systems Disaster Recovery Planning 5. Improved Systems Development Quality 6. Increased organizational communication and trust development through facilitation among various stakeholders
Stoel, D., Havelka, D., &	An analysis of attributes that impact information	The purpose of this study is to analyze attributes identified in prior research that are thought to	Factor analysis Exploratory process identifying potential attributes (survey items)	They find Planning and Methodology and Independence as the most important factors for IT audit quality.

| Merhout, J. W. (2012) | technology audit quality: A study of IT and financial audit practitioners | impact the quality of the information technology audit process. The long-term goal of this stream of research related to IT audit quality is to develop a testable model of constructs that may impact IT audit quality; to develop measurable constructs related to IT audit quality. | To recruit a broad set of practitioners, their implementation of the survey focused on identifying two respondent sets:
1) IT audit professionals
2) financial auditors and other accounting professional involved with IT audits. | Accounting Knowledge and Audit Skills was rated as one of the most important factors associated with financial audit quality. Consistent with this assertion is the higher ratings of Business Process Knowledge and Experience and IT and Controls Knowledge. Analysis of differences between groups (IT auditors and financial auditors as respondents), they find that IT respondents rate the impact of Auditor Experience with Auditee, IT and Controls Knowledge, and Planning and Methodology higher than the financial respondents. |

MODERN TRADE AND CSR: THE CASE OF COSMETIC CHAINS IN BOSNIA AND HERZEGOVINA

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Abstract

Retail organizations, as agents in the distribution channels, operate with a task of direct distribution of goods to the final consumers. Retail organizations need to satisfy consumers' needs though the structure of their assortment, amount and quality of goods and services, at the most convenient place and time, and at prices that respond to consumers' values. Retail organizations are usually distinguished as modern trade and traditional trade. Although the topic of modern trade and traditional trade is attractive for practitioners, there is a lack of research work and scientific sources which describe it. Namely, in the developed world, modern trade almost completely superseded the presence of traditional trade, while traditional trade is very much present as a significant retail and trade format in developing countries.

This study is focused on characteristics of modern trade in developing countries and the role of corporate social responsibility (CSR) for modern trade chains. The issue of corporate social responsibility becomes a key topic for companies across industries and it becomes a desirable form of business strategy in development of companies. In order to examine these issues, an empirical research was conducted on an example of the cosmetic modern trade chains (DM and CM companies), using secondary data and a qualitative research with short semi-structured interviews of 30 random consumers in the Sarajevo, Bosnia and Herzegovina (BIH) city center.

A surprising finding of this study is that the segment of cosmetic products is bought exclusively through modern trade channels according to the indicators from primary research, while secondary data show that in BIH traditional trade channels still dominate in comparison to the modern ones. Conducted researches showed that customers are very loyal to CM and DM and that they prefer these companies to the competitors, even if the competitor holds lower price.

Concerning socially responsible marketing, it is noted and stated as one of the significant reasons for purchase in DM, while CM consumers did not even state it as the reason of their purchase. All of this speaks to the fact that socially responsible marketing of DM significantly influences the loyalty of its consumers since DM company, through its marketing activities, places consumers' interests and relation to the environment before its profitable goals.

Keywords: modern trade, retail, corporate social responsibility, cosmetic chains

JEL classification: L81, M14

1. Introduction

In the development and classification of retail, we distinguish traditional trade including small, usually family, grocery stores, and modern trade, which includes supermarkets and large specialized stores that usually transform into a trading chain (Goldman, Ramaswami and Krider, 2002). One of the most famous companies that represents the trend of modern trade is Wal-Mart (Bloom and Perry 2001). Wal-Mart art also initiated the trend of retail chains power concentration. Weakening the power of the producer and strengthening the power of big retail chains (modern trade) is one of the most obvious development in the field of trade in the previous period (Lewis, 2000).

Nowadays, companies invest in corporate social responsibility more and more (McWilliams and Siegel, 2000). Awareness of the issues such as equal opportunities for all, racial equality, and safety and health in the working place first initiated the public to question business customs (Tafra-Vlahovic, 2009). Terms corporate social responsibility, sustainable development of companies and corporate citizenship are used almost alternatively today. Corporate social responsibility can simply be defined as a duty of each corporate body (company, organization, state body, etc.) to protect the interest of the society (Holme and Watts, 1999).

Previous researches dealt with the role of corporate social responsibility in retail. Oppewal, Alexander and Sullivan (2006) focused on the influence of socially responsible initiatives in shopping centers on the perception of their attractiveness by the consumers. The study partly confirmed the thesis that socially responsible performances positively influence the attractiveness of shopping centers. The aforementioned implies that corporate social responsibility can influence the perception of the brand and image of a retailer.

Researchers also state that retail sector is famous for managing to collect the largest sums for charitable purposes (Barone, Norman and Miyazaki, 2007). For example, CVS corporation implemented the strategy of donating 25 cents per 35 dollars purchase for UNICEF, which resulted in 11% increase in sale for CVS. As a significant factor for consumers' perception is retailer's motivation perception, and thus the consumers rated positively those retailers which they perceived to be truly motivated in a specific socially responsible activity (Barone, Norman and Miyazaki, 2007).

In a research that included 460 consumers, Gupta and Pirsch (2008) showed that corporate social responsibility, its politics and practice influence the creation of image perception of a retailer. Corporate social responsibility is especially efficient in influencing the image of retail store in case positive performance perception of a retailer is present in consumers, which significantly influences their satisfaction and loyalty to a retail store.

Against this background, the present study is set to examine the following research questions: (1) what are the characteristics of a modern trade retail chains, in Bosnia and Herzegovina as a representative developing country? and (2) how corporate social responsibility of retail chains is connected to the consumers' perceptions of such retail chains?

There are various types of modern trade retailers. To assess the research questions, this work focuses on two famous retailers in the sector of hygiene and cosmetics: DM and CM. DM is a German company with a strong position in the entire Europe, and CM is a company from Bosnia and Herzegovina which successfully operates in the domestic market. Hence, the comparison of globally positioned and locally positioned retailer brand could be made. Characteristics of these two retailers, as representatives of modern trade chains, are researched, along with the significance of their corporate social responsibility for the consumers.

2. Theoretical Background

Retail organizations, as agents in the distribution channels, operate with a task of direct distribution of goods to the final consumers. A primary concern of a retailer is expressed in the placement of goods whose amount is determined by individual purchase (or a household in question). Performing this function, retail operates as an agent between the producers and consumers, representing at the same time one of the phases in distribution channels.

Retail organizations need to satisfy consumers' needs though the structure of its assortment, amount and quality of goods and services, at the most convenient place and time, at prices that respond to consumers' values. Quality and quantity of offered goods that represent the retail assortment should be synchronized with the consumers' purchasing power to better target an offer.

Retail, as a tertiary and work intensive economic activity, is shaped in line with the production and consumption. Considering its development, its role constantly grows, both in national income and when assessing the total number of the employees in the sector. Some large retailers are employing so many people across countries/regions that they can even become "too big to fail" and of significant concern for the economies.

In purchase decision making at a specific store, consumers are guided by numerous criteria (features) like: distance, product and service price, width and depth of assortment, service, parking availability, etc. (Brcic-Stipcevic and Renko, 2007). Evaluation, or retail control, is performed continually in comparing the achieved business results with the planed indicators (Krkac, 2007). Retail control does not encompass only the deviations of the achieved from planned indicators, but also determines samples with the purpose of taking certain business activities in the following period. Retail is constantly changing, and fast change is significantly expedited in the past decade.

As its highest priority, retail included decision making on acquiring necessary products, but now a holistic access to management and marketing is present, turning to the consumer more and more, collecting information on their behavior and using an insight into their consumer habits. Once a one-sided business transformed into a highly sophisticated form activity requiring significant efforts of management and marketing.

Retail encompasses companies included primarily in the activities of product purchase from other companies with the intention to sell these goods once again to the final distributor, usually without transforming the product. Retail process is a final step in goods distribution;

therefore, in retail sale products are sold at in smaller quantities to wider population. This process also includes transport and warehousing of goods. Development in other areas is responsible for dynamic changes in present day retail management. In the most developed countries, retail grew and developed dramatically partly due to the occurrence of big trading chains (modern trade) which took a significant part at the market from small independent trade stores (traditional trade). These chains first developed regionally and later nationally.

In the past decade, mergers and acquisitions among large chains intensified such development. Many retail companies now operate with enormous incomes, large number of employees and branched sales network. The largest retail chain, Wal-Mart at the end of 2017 earned $ 485 billion in profits (Marketwatch, 2018), which exceeds gross domestic product of many small countries. Wal-Mart itself employs 1.8 million people. French Carrefour, the largest European retail chain and second in the world, has a network of 12.000 retail stores worldwide. At the same time, a lot of retail chains developed into multinational companies which function in many countries offering different retail services to tis consumers. For example, Carrefour is now a multinational company which uses hypermarkets, supermarkets, standard stores, discount sale facilities, through which they sell goods to the consumers in 30 different countries. More than a half of Carrefour's income is realized outside the domestic market. German Metro group owns food supermarkets, electronics stores, wholesale facilities, cash & carry and more than 50% of their income is realized at 29 markets outside Germany. Tesco has a rapid growth into the market of East Europe and Asia and successfully operates via e-trade at Tesco.com. Even though the growth of electronic trade was overrated at first, it still developed slowly but firmly, and now Tesco earns EUR 1 billion EUR via electronic trade.

In most countries, retail organizations are becoming more and more concentrated. Researches in Great Britain show that first 5 retail food chains make up over 55% of the market, and in France over 70%. Therefore, redistribution of power between distribution chains is one of the most obvious developments in the past decade (Lewis, 2000).

Power of retail organisations grows, now they can be compared to large producers, such as global brands like Proctor & Gamble, Sony or Nestle. Therefore, today a great part of the producer's profit depends on several large retail chains. Along with such development comes an increase in marketing, IT and top management budget.

Increase in sales is not the only contribution to the change in distribution of power among retail chains, but also increased sophistication in retail management combined with larger customer's data availability. Retail is one of the leaders in the field of appliance of new technologies.

Retail point of sale (PoS) data became more valuable since IT systems are now capable to process such large amount of data in a short period of time. Also, since retail organisations grew from regional to national chains, they were capable to acquire knowledge on consumer trends, sales flow related to certain products which increased their significance on the products' way to customers. Data related to the customers are now gathered through loyalty cards which increase knowledge on consumer habits.

Retail is an agent in the distribution chain. However, even though retail was considered to be a passive link in the chain of values from producer to consumer, today retail uses its position to become a dominant player in the distribution chain. Retail chains now develop their own marketing and logistic concepts and take leadership in marketing and logistics in vertical with the manufacturer.

2.1. Characteristics of Modern Trade

In retail trade, most frequently in FMCG (Fast Moving Consumer Goods) industry, we are familiar with two sales channels: modern trade and traditional trade. Modern trade is related to trade chains, or key customers. Those are the customers that order larger quantities of a product over a longer period of time. Traditional trade is related to small stores which sell individually. Traditional stores order lower value of product, but they cover larger territory (Stosic, Petrovic and Antic, 2015).

Position between modern trade and traditional trade is constantly changing, although the channel of modern trade which includes trade chains takes over domination. Nielsen research data (2015) for the Balkan region shows that modern trade in Slovenia has high primacy with 76% share, Croatia follows with 61% share, and in Bosnia and Herzegovina channel of traditional trade still holds the primacy with 57% share, which is also the case in Serbia and Montenegro where traditional stores own 54% and 73% of share respectively.

Channels of modern and traditional trade differ in several key distinctions reflected in definition, work method and processes that take place in stores. Distinctions are shown in Table 1.

Table 1: Distinctions between modern and traditional trade

Basis of distinction	Traditional trade	Modern trade
Definition	Trade organizations that prefer working for businesses that are currently running and have effective outputs.	Trade organizations that prefer putting up goods in markets and have their personal spaces for usage.
Work method	A shopkeeper owns their businesses from the beginning and keeps on doing so until the end.	No proper owner is sitting on shops, they just open their stores around the world and give it a brand name.
Processes	The customer visits the stores, likes something and then buys it by paying at the spot.	Today, online buying and selling and e-payment methods to make it easier for people to shop.

Source: Difference btw (2017). Difference between Traditional Trade and Modern Trade. https://www.differencebtw.com/difference-between-traditional-trade-and-modern-trade/ Access: February 2018.

Although the topic of modern trade and traditional trade is attractive in practice, there is a lack of research work and scientific sources which describe it. Namely, in the developed world, modern trade that is reflected though the presence of trade chains in all segments (FMCG, food, clothes, pharmacy, etc.) almost completely superseded the presence of traditional trade, while traditional trade is very much present and significant trade format in developing countries.

Goldman, Ramaswami and Krider (2002) in their work describe the obstacles of modern trade progress in food industry at the example of Hong Kong. The same situation in researched in Vietnamese market (Cadilhon, Moustier, Poole, Tam and Fearne, 2006). A

similar study compares traditional bazars and supermarkets was conducted in China (Maruyama and Trung, 2007), and in Marocco (Amine and Lazzaoui, 2011). All studies are focused more or less on reactions of the consumers to the new channel – modern trade channel in the fields and countries more accustomed to the traditional trade offer.

This paper focuses strictly on modern trade channel in the field of cosmetic products. Specifically, the focus is on modern trade chains DM and CM, present in Bosnia and Herzegovina, one of which (DM) is international and the other one (CM) is local. According to the previous research, there are eight factors that influence the perception of the consumer in using modern trade chains (Sirohi, McLaughlin and Wittink, 1998): (1) store operations: operational issues such as working hours, training of the employees and characteristics of the employees, (2) store appearance: physical appearance and store organization, (3) staff services: services offered by department managers, workers, cashiers, etc., (4) sales promotion: sales and special actions at the store, (5) relative prices: prices in comparison to the prices of similar products in other stores, (6) goods quality: general perception of goods quality and diversity of brands/categories, (7) perceived value: value for money of a specific store and (8) perceived value of the competitor: value for money of a competitor.

The very topic of this paper is focused on basic characteristics of DM and CM as modern trade chains and examining the impact of their responsible business on user perceptions in conducting qualitative research presented in the research part of this paper.

2.2. Corporate Social Responsibility and Modern Trade

Corporate Social Responsibility, CSR originated in social activism of the 1960s and the 1970s of the previous century. Awareness of the issues such as equal opportunities for all, racial equality and safety and health at the workplace were among the first issues to encourage the public to examine business customs more closely, and then to place such obligations within legal framework (Habunek, 2015).

For many companies this is still an experimental field since they still struggle with the definition of basic goals of a company and avoiding unwanted consequences which could be provoked by forcing such business objectives. European Commission defines Corporate Social Responsibility as a concept according to which a company voluntarily integrates the care on social issues and environmental protection into its business activities and relation to the participants (Vrdoljak Raguz and Hazdovac, 2014). Participants are all individuals, organisations, institutions that can influence the project/entrepreneurial venture or its activities can influence them, positively or negatively.

The issue of corporate social responsibility becomes key topic in companies that operate market business (Singhapakdi and Karanda, 2001), and social responsibility becomes a desirable form of business strategy in development of companies. Definition of World Business Council for Sustainable Development, according to the focus of the organization on economic development, explains corporate social responsibility as a "commitment of a company to support sustainable economic development, and, with the purpose improving the quality of life, to cooperate with employees, their families, local communities and society in general". Organization Business for Social Responsibility defines corporate social responsibility as "business synchronized with ethical, legal and business expectations, and with what society expects from companies or ever surpasses such expectations". This is a broad definition since it includes connecting business decisions with "ethical values and legal regulations along with the respect for people, society and environment".

International Business Leaders Forum (IBLF) considers social responsibility to be "promotion of responsible practice in economy which is useful for economy and society and facilitates achievement of social, economic, ecologically sustainable development by maximising positive influence of the economy on society, along with minimizing negative effects". Of all the aforementioned definitions on corporate social responsibility, definition that CRS is a concept in which subject decides voluntarily whether to contribute to a better society and cleaner environment interacting with other stakeholders is the most suitable (Schiffman and Kanuk, 2004). Basic elements of corporate social responsibility are economic, legal, ethical and philanthropic responsibility of a company.

In modern trade channels corporate social responsibility can be recognized as an extremely current approach to consumers and all interest groups. According to Kotler and Keller (2008) organization which uses social responsible marketing as a temporary cure for reputation problems will not be successful, but if it adopts such business model as a long-term philosophy it shall benefit in numerous ways. An aspect of CSR in modern trade is a very interesting one since retailers do not represent one set of products/services or a certain individual product or brand, but a collection of many with their assortment.

3. Methodology

Numerous interconnected social and cultural, demographic, psychological and other factors undoubtedly influence the process of purchase, however, a focus of this study is social responsible marketing and its influence on the selection of modern trade chains (DM or CM) as a place of desirable purchase. In order to study this topic, an examination of available secondary data was made as well as the qualitative study with final consumers. In researching secondary data (Vartanian, 2010) on retail chains DM and CM, characteristics of modern trade in Bosnia and Herzegovina can be recognized. Furthermore, conducting primary qualitative research (Miles, Huberman and Saldana, 2013) enables better understanding of the perceptions of consumers in Bosnia and Herzegovina of retail chains DM and CM and their corporate social responsibility.

Qualitative research data are gathered through a short semi-structured interview. The goal was to question random consumers on their attitudes significant for the research topic. With the aforementioned goal, research is conducted in Sarajevo very close to both DM and CM sales facilities to reach appropriate consumers, namely at the path between the BBI Centre and Vjecna vatra (Eternal Flame) close to two DM facilities (in BBI Centre and Ferhadija street) and two CM facilities (in Titotva street and Strossmayer street). A total of 30 interviews was conducted. Consumers' responses are gathered and analyzed using content analysis method.

DM is established in BIH in 2005, and first DM store in Bosnia and Herzegovina was opened in June 2006 in Dobrinja settlement in Sarajevo. Today, DM is present in the entire country with 67 stores decorated according to high DM standards. When it comes to CM, it is established in 2003 in Vitez, which is, due to its extremely good location – main road Zenica-Travnik, visited not only by local customers clients, but also from by the customers from the region. Today, CM has 71 stores across BIH. Both companies offer a large number of comparable products to their customers from the field of: beauty, health, baby cosmetics, perfumes, body, hair, face, food and hand care, and household hygiene. However, it can be noticed that some brands that can be found in DM cannot be found in CM and vice versa.

4. Results

In conducting a survey through short semi-structured interview 30 respondents participated including 15 women and 15 men (Figure 1).

Figure 1: Gender of respondents
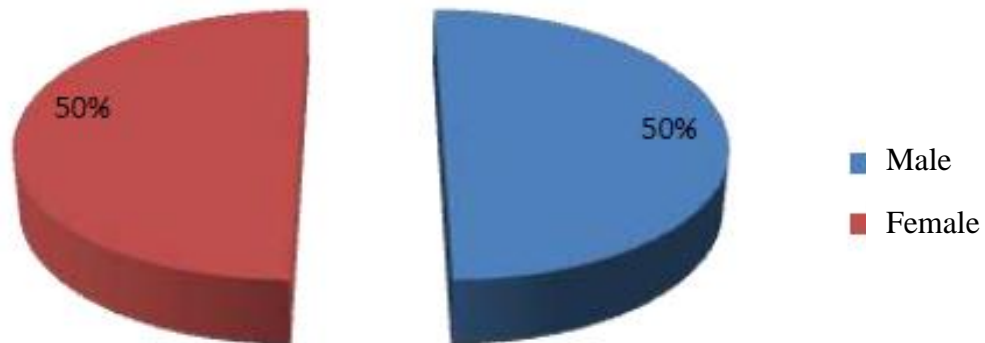
Source: Authors' illustration

Of the total of 30 participants in the interview, most of them belong to the age group of 25-24 (40%) and then follow those aged 35-44 (30%), 15-24 (13%), 45-54 (10 %) and finally 55-64 years (7%), as shown in Figure 2.

Figure 2: Age of respondents
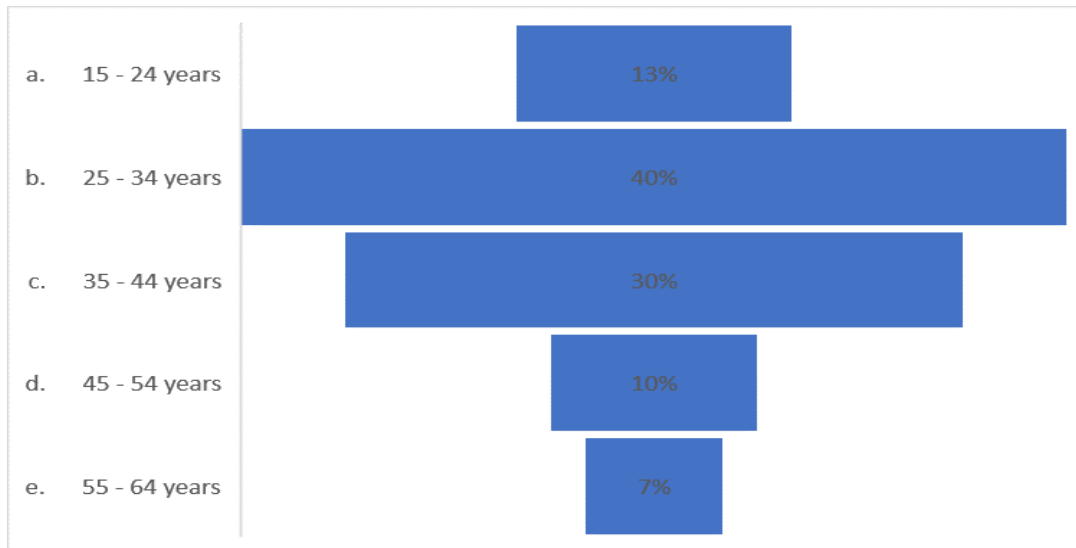
Source: Authors' illustration

Participants responded that they mostly buy at DM (36%). Second in line is CM (27%), then follows Konzum (and other hypermarkets, since some mentioned Mercator) (23%), and finally Didaco (14%). Therefore, according to responses we can conclude that DM is entitled with the greatest trust in the purchase of cosmetic products. Purchase share in competitor stores shows that they rather purchase cosmetic products when purchasing other products for personal use since CM comes at the second place. The full dispersion is shown in Figure 3.

Figure 3: Stores in which respondents purchase cosmetics and personal hygiene products
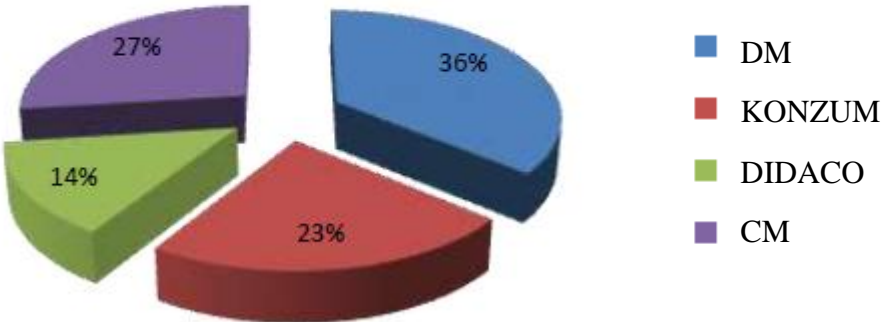
Source: Authors' illustration

The respondents were also asked what they would do if they discovered that the same product is cheaper in a different store in comparison to DM (or CM). The answers show that 56% of the people would still choose DM over cheaper alternative, and if case of CM 67% would choose CM over cheaper alternative.

First group of people consisted of those who stated that they buy cosmetic products in DM exclusively and that they never visit other stores with that purpose. On the other hand, the second group consists of those that state that they would always choose CM over DM, since CM offers different actions and much cheaper products. One female respondent stated "I purchase cosmetics in CM exclusively, I have their loyalty card and they have all the products I need at the best prices". These answers lead to the conclusion that consumers are more inclined to CM for better prices and benefits and that they are more loyal to it, i.e. that smaller number of them leaves to other stores for lower prices. On the other hand, there is a significant segment of those who are loyal only to DM.

Figure 4: Cheaper product purchase

I would still choose DM over the cheaper alternative

I would still choose CM over the cheaper alternative
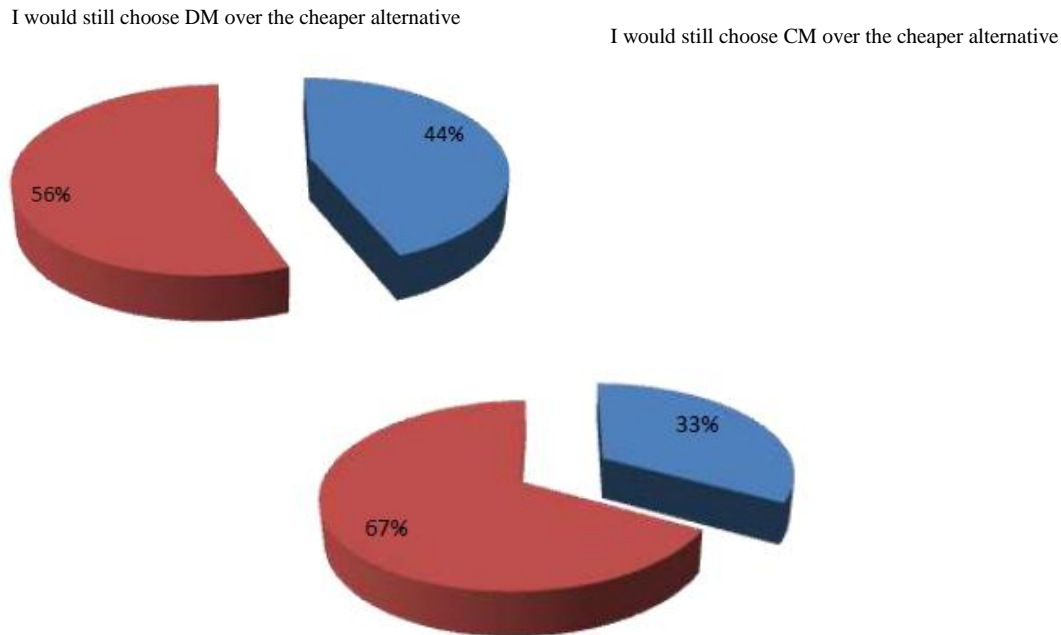
Source: Authors' illustration

The question "Would you purchase cosmetic products in local stores (e.g. grocery store, newsagent, etc.)?" resulted in some interesting answers. After the initial surprise, most respondents would answer that they would never do such a thing, and 12 answered they would do it in case they cannot go to a supermarket at a given moment. Therefore, it is obvious that traditional trade has fewer and fewer shares in the cosmetics sector, at least for the area of Sarajevo, where this empirical study was conducted.

The respondents also stated that the problem of grocery store/newsagents and similar places is that they are not supplied appropriately and that they own only the basic types of products and that they are not at satisfactory level in comparison to DM or CM. Several respondents also stated that these products are often more expensive in traditional trade stores in comparing to modern trade stores. Some stated that they even think that shopkeepers at grocery stores procure products in DM or CM or at similar places, then they add their own margins and present products on the market.

Reasons for purchase at DM and CM differed from one respondent to another. According to the noted answers, it was possible to count the number of responses and to make the ranking of the purchase reasons in line with the responses. Respondents were guided with following six possible reasons for purchase (without a pre-defined order of guidance): availability of a large number of items, better price than the competition, friendly staff, good store promotion, loyalty to the store and socially responsible marketing. The rankings for both stores is presented in Table 2.

First thing that can be noticed in the Table 2 is that the ranking of the reasons of purchase are completely opposite for DM and CM. Namely, for CM, better prices are at the first place, and this same purchase reason is on the fifth place for DM. On the other hand, availability of a large number of items is at the first place for DM, and while this same reason

is on the second for CM. Similar situation is with friendly staff – it is at the second place for DM and on the third for CM. It can be seen that consumers who purchase in DM and ones who purchase in CM do completely different prioritization of purchase reasons, although the type of the store and the channel (modern trade) is the same. It was also interesting to understand why this is so, hence, in Table 2 vignettes with the responses of consumers are presented.

Table 2: Ranking the reasons for purchase in DM/CM and comments of the respondents

#	Reasons for purchase in DM	Reasons for purchase in CM	Comments of the respondents
1	Availability of a large number of items	Better price than the competition	„DM has all I need and all my household needs." „Prices in CM are much better than anywhere else."
2	Friendly staff	Availability of a large number of items	„DM staff is always friendly and helpful, even when I visit them with my kid that can be noisy and naughty." „In CM, I have different items I need, e.g. hair products, make-up, cosmetics and similar."
3	Loyalty to the store	Friendly staff	„I have a habit of buying in DM." „Sellers at CM are always helpful when I have a problem finding something."
4	Socially responsible marketing	Good store promotion	„DM's activities are always directed to environmental protection, I like their methods of raising ecological awareness." „CM is always well promoted with the focus on their low prices on some products. I like their newsletters as well."
5	Better price than the competition	Loyalty to the store	„In DM I can find my favorite toothpaste brand at the significantly lower prices than anywhere else." „I always purchase at CM and I cannot imagine switching to any other cosmetics store."
6	Good store promotion	-	„I use DM's mobile application where I see all actions and promotions."

Source: Authors' illustration

What is furthermore very interesting from the point of view of this study is that socially responsible marketing and CSR activities is at the fourth place for DM, but for CM it did not even appear as one of the choices in respondents. This shows that randomly selected respondents in our study are even not aware of those activities at all. Good promotion is fourth reason for CM, and only sixth for DM. Loyalty to the store is at the third place for DM, and on the fifth for CM. Comments in quoted vignettes also show that attitudes of the consumers are completely opposite for DM and for CM. This can mean that DM and CM are covering a completely different segments of the consumers, however, for this conclusion to be verified, an additional quantitative study would be needed.

Concerning marketing activities of both companies, interviewed consumers are generally not aware of them. Their attention is mostly occupied by promo catalogues both for CM and DM. During the interview we could not conclude that promotional activities directly influence the reasons for purchase, however it is possible that they influence respondents' attitudes on the brand.

Socially responsible marketing implies that a company is socially responsible in its marketing activities protecting the interests of its consumers. DM already applies socially responsible marketing but by applying considering it even stronger it can elevate the status of this activity in the consumers' mind and make it even a stronger reason for purchase by their consumers and improve its chances for long-term business and strengthen its market position. Current adopted concept of socially responsible marketing of DM provides this company with good image and reputation, however applying stated recommendations and improving its marketing activities as socially responsible, DM can achieve for customers to recognize that as its added value and advantage before competition.

CM should also pay more attention to a better socially responsible marketing. Since the consumers rather choose the products of the companies that show care for consumers' interests, applying socially responsible marketing in CM can keep and increase loyalty of its customers. With the secondary research insights, it could be seen that CM has several active CSR campaigns and that it shows its social responsibility to the community in various reasons, however, these activities are still not at the level which is strong enough to be recognized by consumers as a reason for purchase.

5. Discussion and Conclusions

Review of relevant research literature gives a brief overview of the field of retail trade, with a special emphasis on rarely researched topic of modern and traditional trade channels in retail. In addition, the focus of the study was on the application of the concept of socially responsible marketing in the modern trade chains. Based on the conceptual framework and previously conducted studies, in this study, an empirical research was conducted consisting of the overview and analysis of secondary data on an example of modern trade chains in the cosmetics sector (DM and CM companies), and qualitative research using short semi-structured interviews of 30 random consumers in the Sarajevo city center.

A surprising finding of this paper is that the segment of cosmetic products is bought exclusively through modern trade channels according to the indicators from the interviews, while secondary data show that in BIH traditional trade channels still dominate in comparison to the modern ones. Possible reason of this finding is that the respondents were placed in the area of Sarajevo where many modern trade stores are located, and the whole country was included in the sample, the results would probably be different and more dispersed, since some places and even towns do not have modern trade stores.

Interviews also showed that customers are very loyal to both examined modern trade stores, CM and DM, and that this loyalty is even at the behavioral level, since they prefer these companies to the competitors, even if the competitor holds lower price. It is especially interesting that higher percent of loyalty is expressed in the case of CM than DM, and a possible reason is the fact that CM is generally known for better prices and greater sales promotions for their product assortment than DM.

On the other hand, concerning socially responsible marketing, it is noted and stated as one of the significant reasons for purchase in DM, while CM consumers did not even state it

as the reason of their purchase. All of this speaks to the fact that socially responsible marketing of DM significantly influences the loyalty of its consumers since DM company, through its marketing activities, places consumers' interests and relation to the environment before its profitable goals. This makes it a company that operates its business ethically, socially responsible and desirable, which reflects on loyalty of DM customers who choose DM over other stores due to all the aforementioned applied activities. All of this contributes to a great business success of DM, but also to the protection and strengthening of interest of its consumers who always come back faithfully.

DM continually starts and supports numerous projects and campaigns related to social responsibility and ecology and participates in donating to various health, cultural, educational and social institutions, which, on the other hand, CM must improve. They turn more and more to biologically grown food and thus increase production lines based on ecological farming. Research results showed that consumers perceive DM as a company which tends to protect consumer's interests and respects consumers' wishes and needs, as well as the needs of entire social community, which is the main reason of consumers' loyalty to DM, which are main features of trade.

When it comes to the research questions posited in this study, they are answered as well. Namely, characteristics of modern trade are shown through characteristics of DM and CM as chains of cosmetic and other products in BIH, and the fact that is most dominant in consumers' perception is the range of assortment and availability of different products. On the other hand, it is shown that traditional trade channels have limited assortment and usually bigger pries of the same products which eliminated them as a purchase place in the respondents.

Concerning second research question that is related to the way corporate social responsibility of retail chains is connected the customers' perception of such retail chains, it could have been seen from the primary study that CSR is significant for DM customers and is one of 6 basic reasons of purchase in DM stores, and that they are aware of different actions (including social and ecologically aware activities), while CM customers are not even aware of these activities and do not state them as a significant reason for purchase.

This research has its limitations as well. Sample representativeness of the interviewed respondents is certainly one of them. Although qualitative research does not necessarily need to be representative, since neither causal relations nor statistically confirmed hypotheses have been created, insights of the study would probably be different if we included respondents from the entire BIH. Also, one of the limitations is lack of literature in the field of modern and traditional trade, so literature review was mainly based on characteristics of wholesale and retail in general. Further studies should focus on examining this issue from the quantitative point of view, trying to make causal connections between potential reasons of purchase and CSR activities and consumers' perceptions, attitudes and behaviors.

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ALL YOU NEED IS LOVE! THE ROLE OF BRAND PERSONALITY IN GENERATING FEELINGS OF LOVE TOWARD A BRAND

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Abstract

The purpose of this research is to highlight the role of brand personality dimensions ('excitement' and 'sincerity') in the formation of brand love for national and private label brands. We propose to address this issue by seeking answers to the following questions: (1) Do brand personality dimensions ('excitement' and 'sincerity') contribute to the formation of a love emotion toward a brand? (2) Are there differences in the size of effects between brand personality dimensions and love emotion toward a brand among national and private label brands? Data were collected through a field survey via the store-intercept method. To test the research hypotheses, we resort to two samples, which implied the collection of usable 662 questionnaires. Research instrument – questionnaire compromised scales which were validated and found reliable in previous research. Confirmatory factor analysis was used to test the reliability, convergent and discriminant validity of the constructs of interest. Structural equation modeling (SEM) technique was employed to analyse the effect of brand personality dimensions ('excitement' and 'sincerity') on brand love. Moreover, group comparisons were made between national brands and private label brands, using structural equation modelling. Our findings suggest that two dimensions of brand personality – 'excitement' and 'sincerity' have a significant positive influence on brand love for both types of brands (national and private label brands). The multiple group analysis identified differences in the influence of brand personality dimensions ('excitement' and 'sincerity) on brand love between national brands and private label brands. The brand 'excitement' seems to contribute the most to brand love for national brands, whereas brand 'sincerity' contributes the most to brand love in the context of private label brands. This study provides marketing managers of national and private label brands some insights into how to spur brand love. Our results reinforce the notion of the importance of personality characteristics attached to brand in the formation of love-like emotion toward a brand.

1. Introduction

Besides declaring love to our loved ones, the word 'love' is also commonly used when talking about products and brands. Phrases such as "I absolutely love this Chanel dress! ", "I adore Dior! ", "I love Starbucks Coffee!" or "Manolo Blahnik - Love His Shoes!" are quite often heard. Marketing experts have already picked up the idea of beloved brands, and they rely heavily on emotionally laden advertising (e.g., McDonald's: "I'm Lovin' It," the 1st generation MINI Cooper's: "Is it love?", Tiffany& Co.: "What Makes Love True?"). Although management-oriented literature (e.g., the idea of a 'lovemark' developed by the CEO of Saatchi & Saatchi Kevin Roberts in 2005), has already exposed emotions as a core concept for building and retaining strong bonds between a consumer and a brand, academic research on this topic is still in its infancy (Heinrich, Albrecht and Bauer, 2012; Hegner, Fenko and Teravest, 2017).

Previous brand love related research placed focus on a clear differentiation of brand love with other consumer-brand relationship constructs such as brand trust, brand identification or brand attachment, as well as issues of conceptualization and operationalization of brand love (e.g., Batra, Ahuvia & Bagozzi, 2012; Carroll and Ahuvia, 2006; Shimp and Madden, 1988). The focus of most brand love studies is on national brands (e.g., Albert and Merunka, 2012; Bairrada, Coelho and Coelho, 2018; Albert, Merunka, and Valette-Florence 2008; Batra *et al.*, 2012; Carroll and Ahuvia, 2006). However, there is a paucity of research on the consumer - brand love relationships in the context of private label brands (e.g., Pandowo, 2016; Roy, Khandeparkar and Motiani, 2016).

Private label brands, i.e., brands sponsored or owned by retailers and sold exclusively in their stores, have experienced remarkable growth over the last decades. The penetration and transformation of private label brands across countries, industries, and product categories have dramatically changed the competitive brand landscape. Nowadays, private label brands are present in more than 90% of the categories of consumer packaged goods (CPGs) enjoying broad product assortments, with high levels of visibility in hypermarkets, supermarkets, and discounters (Cuneo, Milberg, Alarcon-del-Amo and Lopez-Belbeze, 2018). According to the latest data published by the PLMA (*Private Label Manufacturer Association*) private label brands have achieved at least a 30% share of sales in 17 European countries. Overall, Europe is considered the most developed private label brand region with the countries Spain (52%), Switzerland (51%), United Kingdom (46%), Germany (45%), and France (33%) reporting the highest market share of private label brands in Europe and worldwide. Moreover, the growth of private label brands is also higher than that experienced by national brands (2.5% vs. 1.5%) (Cuneo *et al.,* 2018). According to a forecast from Rabobank (2012), by 2025, private label brands are expected to reach a global market share of 50% across all CPG categories. This makes them of greater strategic importance to retailers and an increasing threat to producers of national brands.

The relationship between national brands and private label brands can be characterized as both one of dependency and a struggle for channel control (Garretson, Fisher and Burton, 2002). This peculiar 'marriage' creates uneasy alliances between the parties as they need each

other and yet simultaneously compete to maximize their share of channel profit. Sitting side by side on retailers' shelves, private label brands and national brands are 'strange bedfellows' who are struggling to win the hearts and minds of consumers. Thus, exploring the factors which can lead to the formation of a love-like emotion toward a national brand and private label brands is an important aspect of research that is interesting and worth studying.

Therefore, this study aims to investigate how brand personality dimensions ('excitement' and 'sincerity') are related to the brand love of two types of brands - national and private label brands. To this end, this study focuses on an emerging and less-investigated market in the south-eastern region in Europe (i.e., Bosnia and Herzegovina). The following research questions guide our study:

RQ1. Do brand personality dimensions ('excitement' and 'sincerity') contribute to the formation of a love emotion toward a brand?
RQ2. Are there differences in the size of effects between brand personality dimensions and love emotion toward a brand among national and private label brands?

This paper is organized as follows. First, we provide a literature review and hypotheses corresponding to research objectives. Then, the methodology is described. Next, the results are discussed, to end with some conclusions, implications and the research limitation.

2. Research background and hypotheses

2.1. Brand love: the concept and its importance

Although brand love is a well-known and essential concept in research on brand-consumer relationship, there is very little agreement as to what brand love is (Batra *et al.*, 2012). Carrol and Ahuvia (2006: 81) defined brand love as ''the degree of passionate emotional attachment a satisfied consumer has for a particular trade name''. Similarly, Albert, Merunka and Valette-Florence (2009) described brand love as a strong feeling, made up with a passion and/or a feeling of affection, of a consumer for a brand. Due to the lack of consensus pertaining to the definition of brand love, Batra *et al.* (2012) proposed a prototype-based definition of brand love. Using a prototype approach, which posits that complex or fuzzy concepts are best described by a list of attributes that are typically associated with a particular concept, Batra *et al.* (2012) position brand love as the type of the relationship (rather than as an emotion) that consumers establish with the brands. These relationships are very complex and multi-layered, and they tend to encompass "multiple interrelated cognitive, affective, and behavioral elements, rather than a specific, single, transient love emotion" (Batra *et al*, 2012: 6).

The differences between existing definitions of brand love have led to differing brand love's conceptualizations. In their ground-breaking study, Shimp and Madden (1988) proposed a tripartite conceptualization of brand love – liking, yearning, and commitment. Similarly, Keh, Pang and Peng (2007) argue that brand love is a tri-dimensional construct, which can be decomposed into intimacy, passion, and commitment, reflecting its emotional, conative, and cognitive bases, respectively. Adapting the triangular theory of love of Sternberg (1986) in a consumption context, Thomson, MacInnis and Whan Park (2005) argue that brand love encompasses three dimensions, namely affection, connection, and passion. While some scholars have applied interpersonal love theories to define and conceptualize brand love, others have studied this feeling as "a new marketing construct that helps explain and predict

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variation in desirable post-consumption behaviors among satisfied consumers" (Carrol and Ahivia, 2006: 79). Carrol and Ahuvia (2006), without making any reference to interpersonal love theories, suggest that brand love includes the following elements: (1) passion for the brand, (2) attachment to the brand, (3) positive evaluation of the brand, (4) positive emotions in response to the brand, and (5) declarations of love for the brand. According to Batra *et al.* (2012), brand love is a long-term relationship between a consumer and brand, and it can be characterized by the following attributes:

- passion-driven behaviors, meaning the consumer has a passionate involvement with the brand and desires to use it, has frequently interacted with the brand in the past, and has invested resources, including time and money, in the brand;
- a positive emotional connection, relating to consumers' feelings that there is a natural fit between the brand and themselves, and experiencing an emotional connection and positive emotions with the brand;
- self-brand integration, denoting that consumers have frequent thoughts about the brand, which is perceived to express consumers' current and desired self-identity, also providing meaning to life;
- long-term relationship, meaning that consumers desire the brand to be part of their life for a long time;
- anticipated separation distress, reflecting how emotionally painful it would be for consumers if the brand were to cease existence;
- positive attitude valence, involving an overall positive evaluation of the brand; and
- attitude strength, which concerns a high degree of certainty and confidence in the feelings a consumer holds about a focal brand.

A large body of existing literature advocates a multi-dimensionality of brand love. However, Carroll and Ahuvia (2006) argue that brand-love is the uni-dimensional construct. Although Carrol and Ahuvia's (2006) brand love scale favors unidimensionality, ten items composing a scale capture the different faces of brand love such as passion, happiness, delights, attachment or well-being.

As to the outcomes of brand love, the findings obtained in previous studies indicate that brand love is positively related with brand loyalty, word-of-mouth, and willingness to pay a premium price (e.g., Albert *et al.,* 2009; Bairrada, Coelho and Coelho*,* 2018; Batra *et al.,*2012). These positive outcomes of brand love suggest that identifying the antecedents of brand love should have important payoffs.

2.2. Antecedents of brand love

Previous studies that have explored the antecedents of brand love have identified few variables that are linked to brand love. Bairrada *et al.* (2018) stated that antecedents of brand love can be separated into two different types, namely utilitarian/functional and symbolic /experiential attributes of a brand. Studies focusing on the functional attributes as potential antecedents of brand love found that perceived brand quality (Bairrada *et al*., 2018: Batra et *al*., 2012; Rauschnabel and Ahuvia, 2014), brand innovativeness (Bairrada *et al,* 2018) are good predictors of brand love. Additionally, there are a number of studies that rely on an experiential approach to consumer behaviour, which have identified other antecedents of

brand love, including, self-congruity (Bıçakcıoğlu, İpek and Bayraktaroğlu, 2016; Huber, Meyer, and Schmid, 2015; Wallace, Buil, and Chernatony 2014), brand identification (Albert *et al*., 2013), social identity (Vernuccio, Pagani, Barbarossa and Pastore, 2015), and brand personality (Becheur, Bayarassou and Ghrib, 2017; Glynn and Widjaja, 2017; Ismail and Spinelli, 2012).

Although both functional/utilitarian as well as symbolic/experiential elements of a brand are important to the formation of brand love, this study is anchored into an experiential model of consumer behavior. As suggested by Bairrada *et al.* (2018) functional/utilitarian attributes are important for brand love, but their effects are mediated by constructs with a higher level of abstraction (e.g., self-congruity, brand personality, brand identification, etc.). Upon a review of the literature on symbolic/experiential attributes of a brand used in consumer-brand relationship studies, we focused on the brand personality as the attribute with a higher symbolic/experiential weight.

Brand management scholars (Aaker, 2007; Aaker, Benet-Martinez and Garolera 2001; Hankinson, 2004) argue that just like humans, a brand has a personality. Thus, brand personality refers to "the set of human characteristics associated with a brand" (Aaker, 1997: 347). Brand personality enables consumers to identify themselves with a brand and to express their own personality through the brand, as individuals tend to consider possessions to be part of their "self"(Belk, 1998). Brand personality is a multi-dimensional construct, encompassing five generic dimensions: sincerity (honest, genuine and cheerful), excitement (daring, imaginative and up-to-date), competence (reliable, dependable and efficient), sophistication (glamorous, charming and romantic), and ruggedness (tough, strong and rugged). In this study, the primary focus is on two dimensions of brand personality – 'excitement' and 'sincerity'. As suggested by many scholars, excitement and sincerity are considered as two fundamental dimensions that capture the majority of variance in personality rating for brands (Aaker, 1997; Aaker, Fournier and Brasel, 2004). Moreover, previous findings suggest that these two dimensions of brand personality are robust across individuals, product categories, and cultural contexts (Aaker *et al*., 2001).

2.3. The relationship between brand personality and brand equity

Although previous research investigated different antecedents and consequences of brand love, the relationship between brand personality and brand love is still under-researched. As mentioned earlier, we will test the effect of two dimensions of brand personality ('excitement' and 'sincerity') on brand love. Drawing upon the interpersonal love theories, we expect that certain personality characteristics of a brand trigger greater brand love. On the basis of literature review, we propose the following hypotheses:

H1: Brand personality dimension 'excitement' is positively related to brand love, for national brands and private label brands.
H2: Brand personality dimension 'sincerity' is positively related to brand love, for national brands and private label brands.
H3: There are differences in the size of the effect between brand personality dimensions ('excitement' and 'sincerity') and brand love among national and private label brands.

3. Methodology and findings

3.1. Research setting

In this study, we placed focus on brand love for two types of brands, private label brands and national brands. Since the majority of previous studies investigated brand love in the context of national brands, findings obtained cannot be easily generalized to private label brands. To deepen our understanding of brand love, it becomes paramount that scholars conduct more research in the context of both national and private label brands. Thus, in this study we selected private label brand *Balea* and its national brand counterpart *Nivea*, a German personal care brand owned by the Hamburg-based company Beiersdorf Global AG. *Balea* is a private label brand owned by *dm-Drogerie Markt*, the leading health and beauty retailer in the Central and Eastern Europe, encompassing more than 3,000 retail stores in 12 countries. In Bosnia and Herzegovina, it has been operating since 2006 and currently has more than 50 stores across the country. It offers a budget to mid-priced private label brands across various product categories (e.g. *Alverde*, *Balea*, *Babylove*, *Sundance,* etc.). For instance, the *Balea* brand compromises a widespread, range of face, body, and hair care products for women and acts as an umbrella brand for products that serve special needs like *Balea Professional* (hair care), *Balea men* and *Balea med* for sensitive skin. As suggested by Richardson, Jain and Dick (1996) , consumer propensity toward private label brands varies among product categories. Thus, for the purpose of this study we chose the personal care product category (i.e., shower gel) that carries higher purchase risk and a greater level of consumer involvement.

3.2. Data collection and sample

Data to test the research hypotheses was collected using a cross-sectional in-store intercept survey among consumers residing in the city of Sarajevo (Bosnia and Herzegovina). At the exit of the store, undergraduate students with general training in market research captured customers whom they asked to complete a self-administered questionnaire that took about 10 min. The surveys were carried out at five different stores belonging to drugstore chain *dm - Drogerie Markt*. Upon approaching the respondents, the interviewers identified themselves, explained the purpose of the research, and provided respondents with the definition of national and private label brands. To minimize the potential bias due to non-probability sampling, interviews were conducted on both weekdays and weekends during morning and late afternoon/evening hours. At the end of fieldwork, a total of 662 usable questionnaires were obtained across two types of brands, 340 for national brand *Nivea* and 322 for private label brand *Balea*. The sample was slightly skewed towards females, approximately 2:1 (68.3% were females, and 31.7% were males). This unequal gender distribution of the sample is in line with the assumption that women are usually more responsible for conducting the shopping for a household than their male counterparts (Beneke, 2013). In terms of age, 23.3% of respondents are between 20 – 30 years old; 36.2% between 31-40; 27.2% between 41-50; and 13.3% over 51 years old. Regarding educational level, 52.4% of respondents have a high school or less, whilst 47.6% have at least a bachelor's degree. With the regard of the frequency of national brand purchases, 97.6% of respondents said they purchased national brand *Nivea* either often or sometimes. Similarly, more than three quarters (87.9%) of respondents said they purchased private label brand *Balea* either often or sometimes. This indicates that the sample is consisted of consumers who are *au fait* with both national and private label brands.
3.3. Research instrument

The research instrument - questionnaire consists of two parts. The first part of the questionnaire deals with the measurement of the constructs of the interest: two dimensions of brand personality ('excitement' and 'sincerity') and brand love. To measure brand love, we adopted ten items from the scale by Carrol and Ahuvia (2006), which was used subsequently by other authors (e.g., Khandeparkar and Motiani, 2018). Brand excitement and brand sincerity, as two dimensions of brand personality, were captured by corresponding items from *Brand Personality Scale* developed by Aaker (1997). All the items were measured on a seven point Likert scale, from 1 totally disagree to 7 totally agree. The second part of the questionnaire presents respondents' demographic information (gender, age, income, education, the frequency of national brand and private label purchases), each measured via a categorisation scheme.

4. Results

This section focuses on the presentation and analysis of data obtained from research and provides interpretation of the main findings. Following Anderson and Gerbing (1988) methodological suggestion, the two-step approach for assessing structural equation models was employed. The first stage involves the assessment of the measurement model, and the second stage proceeds to test the structural relationships (hypotheses) among the latent constructs. Moreover, a multigroup-analysis was carried out for national and private label brands. The analysis was performed using a program AMOS.

Measurement model. To assess the reliability, convergent validity, and discriminant validity of constructs of interest, Confirmatory factor analysis (CFA) was employed

Table 1. Scale items and confirmative factor analysis results

Constructs	Code	Manifest variables and dimensions	λ
Brand love	bl1	This is a wonderful brand	0.764
(BL)	bl2	This brand makes me feel good	0.687
	bl3	This brand is totally awesome	0.777
	bl4	I have neutral feelings about this brand. (-)	0.862
	bl5	This brand makes me very happy	0.806
	bl6	I love this brand!	0.863
	bl7	I have no particular feelings about this brand. (-)	0.869
	bl8	This brand is a pure delight	0.598
	bl9	I am passionate about this brand	0.646
	bl10	I'm very attached to this brand	0.521
Brand Excitement	be1	Daring	0.659
(BE)	be2	Spirited	0.987
	be3	Imaginative	0.993
	be5	Up to date	0.991
Sincerity	bs1	Domestic	0.986
(BS)	bs2	Honest	0.989
	bs3	Wholesome	0.888
	bs4	Cheerful	0.945

Source: Author's elaboration

. The measurement model was estimated using the maximum-likelihood method (MLM) and the model fit was tested using several fit indices. Hu and Bentler (1999) argued that it very difficult to specify cut-off value for each fit index because it does not work equally

well under various conditions. However, to enhance the interpretation of the findings, the following benchmark is being provided. Values for the Root Mean Square Error of Approximation (RMSEA) can range from zero to 1.0, whereas an RMSEA value of less than 0.5 indicates good fit, in the range of 0.05 to 0.10 is considered an indication of a fair fit, and values above 0.1 indicated poor fit. For the Standardized Root Mean Squared Residual (SRMR), the conventional cut-off point is less than 0.08 for a good-fitting model (Hu and Bentler, 1999). A normed chi-square value (χ^2/df) of less than 5.0 has been suggested to indicate an adequate model fit (Schumacker and Lomax, 2004). According to Hair *et al.* (2010), the Comparative Fit Index (CFI) and the Tucker-Lewis index (TLI) should be greater than 0.9. Traditionally, values of 0.9 and greater for Goodness-of-Fit Index (GFI) and the Adjusted Goodness of Fit Index (AGFI) indicate well-fitting models (Hooper, Coughlan and Mullen, 2008). According the model evaluation criteria suggested in the prior discussion, the overall fit of the measurement model to data was acceptable. Although normed chi-square value (χ^2/df) was slightly higher than recommended value (χ^2=980.718, df=132, p<0.001), the value of other fit indices, Comparative Fit Index − CFI (0.938), Tucker-Lewis index − TLI (0.929), Root Mean Square Error of Approximation − RMSEA (0.070), and the Standardized Root Mean Squared Residual − SRMR (0.0493) showed the model fit the data adequately.

We then assessed construct's internal consistency and validity. All constructs were deemed to be highly consistent and reliable as their composite reliability (CR) scores were above the recommended cut-off value of 0.7 (Bagozzi and Yi, 2012). According to Hair *et al.* (2010), convergent validity is satisfied if the standardized factor loading exceeds 0.5, is significant at 0.001, and average variance extracted (AVE) is greater than 0.5. As shown in Table 1 the standardized factor loading of items (manifest variables) ranged from 0.521 and 0.993, and all were statistically significant (p<0.001). Moreover, Average variance extracted (AVE) of the three latent constructs (brand excitement, brand sincerity, and brand love) ranged from 0.530 to 0.908. These findings suggest that convergent validity is satisfied. Discriminant validity was assessed by comparing the square-root AVE of each construct to its correlations with other constructs (Fornell and Larcker, 1981). The results showed that discriminant validity of constructs is supported as the square-root AVE of each construct is greater than the correlations between that construct and any other construct. Table 2 displays CR, AVE, square-root AVE and correlation values, supporting reliability, convergent and discriminant validity of constructs.

Table 2. Reliability, convergent and discriminant validity of constructs

Construct	Composite reliability and convergent validity		Discriminant validity[a]		
	CR	AVE	BL	BE	BS
Brand love (BL)	0.915	0.530	0.728[a]		
Brand excitement (BE)	0.933	0.788	0.259	0.888	
Brand sincerity (BS)	0.975	0.908	0.338	0.171	0.953
Note: [a] Square-root AVE values are in diagonals (bold) and correlations (r) are off diagonal values					

Source: Author's elaboration

Structural model. Once the measurement model was validated, subsequent structural equation modelling (SEM) analyses were conducted to test the hypotheses. The fitting indices of the structural model are as follows: χ^2=980.718; df=132; p=0.000; CFI = 0.938; TLI = 0.929;

RMSEA = 0.070; SRMR = 0.0493. In comparison with values suggested in the prior discussion, findings demonstrate that the model's fit is satisfactory. Thus, it was deemed appropriate to test the hypothesized paths. Furthermore, we found that our model explains 17.9% of brand love, suggesting that the structural model exhibits the adequate level of explanatory power.

Table 3. Hypotheses testing

Causal relationship (standardized coefficient)	Total sample	National brand	Private label brand
Brand excitement → Brand love	$\beta = 0.070^{***}$	$\beta_{NBs} = 0.34^{***}$	$\beta_{PLBs} = 0.06^{***}$
Brand sincerity → Brand love	$\beta = 0.134^{***}$	$\beta_{NBs} = 0.24^{***}$	$\beta_{PLBs} = 0.36^{***}$

Source: Author's elaboration

As predicted by hypothesis H1, a positive relationship between brand personality dimension 'excitement' and brand love was supported for both types of brands ($\beta = 0.07$; p<0.001). Brand personality dimension 'sincerity' was also found to have a statistically significant positive influence on brand love for both types of brands ($\beta = 0.134$; p<0.001), providing the support for hypothesis H2.

The second objective of the present study was to analyse the influence of the type of a brand (national brand vs. private label brand) on the relationship between brand personality dimensions ('excitement' and 'sincerity') and brand love. Therefore, group comparisons were made between national brand and private label brand, using structural equation modelling. The χ^2 difference test indicated that there is statistically significant difference between the national and the private label brands in the effect of brand 'excitement' on brand love ($\chi^2 = 3.589$, df=1, p<0.05) as well in the effect of brand 'sincerity' on brand love ($\chi^2 = 12.272$, df=1, p<0.001). Therefore, the hypothesis H3 is supported.

Comparing the standardized coefficients obtained, the following results should be highlighted (Table 3.). First, relationship between brand personality dimension 'excitement' and brand love is significantly stronger for national brands as compared to private label brands. ($\beta_{NBs} = 0.34^{***}$; $\beta_{PLBs} = 0.06^{***}$). The relationship between brand personality dimension 'sincerity' and brand love, on the other hand, is significantly stronger for private label brands compared to national brands ($\beta_{PLBs} = 0.36^{***}$ $\beta_{NBs} = 0.24^{***}$). Thus, in terms of the effect size, the variable brand 'excitement' seems to contribute the most to brand love in the context of national brands, whereas brand 'sincerity' contributes the most to brand love in the context of private label brands.

Conclusions
The brand love construct has been recently proposed as a means of capturing the nature of the relationship between customers and brands (Batra *et al.,* 2012). Findings obtained in previous studies indicate that brand love might have important consumer implications, including brand loyalty, positive word-of-mouth, and willingness to pay a premium price (e.g., Bairrada *et al*., 2018; Batra *et al*., 2012; Wallace *et al.,* 2014). However, previous studies placed focus on exploring antecedents of brand love in the context of national (manufacturer) brands. Only a few studies explored which factors can contribute most effectively to the creation of loveable private label brands. In this study, we applied the construct of brand love to private label brands, based on the premise that consumers are able to create strong emotional bonds with

private label brands in the same way as they are creating love-like relationships with national brands. Given that the antecedents of brand love remain mostly unknown, this study enables us to deepen our understanding of how brand personality dimensions ('excitement' and 'sincerity') can lead to the formation of a love-like emotion toward a national and private label brand. This study, thus, provides credibility to the applicability of the brand attachment theory in this context of both national and private label brands.

Regarding RQ1: "Do brand personality dimensions ('excitement' and 'sincerity') contribute to the formation of a love emotion toward a brand?", the answer is "Yes". Our findings suggest that two dimensions of brand personality ('excitement' and 'sincerity') have a significant positive influence on brand love for both types of brands (national and private label brands). These results suggest that 'excitement' and 'sincerity', as dimensions of brand personality, are critical to the success of both national and private label brands. These findings indicate that the more the brand is perceived as exciting, the more the customer will feel the pleasure of being in love with it. A brand is perceived as exciting when its products and packaging are innovative and original, or its advertisement campaigns are unique, remarkable, surprising or unfamiliar. On the other hand, a brand with sincerity is seen as more down-to-earth brand, which may mean quality at reasonable prices.

In relation with RQ2: "Are there differences in the size of effects between brand personality dimensions and love emotion toward a brand among national and private label brands?", the answer is "Yes". Our findings suggest sincerity dimension, which reflects the down-to-earth nature of the brand, has the greater influence on brand love for private label brands. On the other hand, excitement dimensions, suggests daring, spiritedness and imagination, had the greater influence on brand love for national brands. These findings are in line with previous studies arguing that relative role of brand personality in shaping consumer-brand emotional relationships varies across product categories and type of a brand (Lim, Ahn and Yoo, 2003; Glynn and Widjaja, 2015; Toldos-Romero and Orozco-Gómez, 2015).

The present study provides marketing managers of national and private label brands some insights into how to spur brand love. Our results reinforce the notion of the importance of personality characteristics attached to brand in the formation of love-like emotion toward a brand for both national and private label brands. Building on our results, managers are encouraged to scrutinize the personality characteristics of their brands and focus their marketing actions on those leading to greater love links with the brand, in order to build long-term consumer-brand relationships. A closer examination of the differences between the size of the effect of brand personality dimensions ('excitement' and 'sincerity') on brand love among national and brand brands suggests that marketing managers should convey different brand personality traits to consumers in order to cultivate brand love. Marketing managers of private label brands should emphasize the sincere attributes (e.g., nurturing, warmth, family orientation, traditionalism) of their brands whereas marketing managers of national brands should strengthen the excitement of their brands. Marketing managers can act on this in a number of ways, namely, by carefully managing the price, distribution, product features and brand communication.

This research has a number of limitations, which constitute areas for future research. First, data were collected exclusively in the retailer's stores located in the city of Sarajevo. Therefore, results may differ concerning other domestic, regional and national markets as well as other product categories. Future studies are, therefore, welcomed in expanding the domain of this research with respect to the geographical coverage and product category. Second, the study was carried out on a convenience sample, and future studies could improve in this

regard. Third, it is also possible that the frequency with which consumers use a brand, as well as how long they have been using it, affect the love for it. Since this issue was not controlled in the current study and has also been neglected in past research, it should be addressed in future research endeavours. Fourth, this study only examined the impact of two dimensions of brand personality on overall brand love. We think future studies should try to capture the multi-dimensional nature of brand personality as well as brand love. Finally, it is possible that the relation between brand personality dimensions and brand love might be moderated by consumer's personality traits (e.g., self-esteem, value consciousness, product involvement, etc.) as well as contextual variables (e.g.. type of product, the stage of market development and the number of competing brands in the market). Hence, future studies might address this issue.

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TO WHOM ARE YOU LOYAL, TO GLOBAL OR LOCAL BRANDS – EXPERIENCE BEFORE LOYALTY

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Abstract

This research is focused on the impact of the brand awareness and brand reputation on the customer experience with the brand (brand experience) and further impact of brand experience on brand image and brand loyalty. Finally, the effect of brand image on the brand loyalty is considered. In order to test the conceptual model, we conducted an empirical study in a developing country, using one global and one local brand. Our results show consistent findings across global and local brands regarding positive impact of brand awareness and experience on the brand image. On the other hand, there are differences in the determinants of brand experiences, as well as in the effects of brand reputation. Based on the findings, theoretical and managerial implications of the findings are considered and future research suggestions are made.

Key words: brand experience, brand image, brand loyalty, global brands

JEL classification: L81, M14

1. Introduction

Customer loyalty to the brand or brand loyalty is one of the key components for companies survive and growth in last decades, especially in the cases of the companies which face the competition of global or regional brands and companies. In that circumstances identification of brand antecedents and their impact on the brand loyalty as well as identifying customer preferences regarding local or global brands are becoming one of the most researched topics in theoretical and empirical studies.

In that context different topics related to the brand strength and potentials for brand development has attracted the attention of many researchers and studies in recent decades (Rubio, Oubiña & Villaseñor, 2014). Namely, brand strategy is one of the most important means for creating long-term relationships with the customers and increasing companies' chances for growth and success in the future. Therefore, academic and empirical researches are focusing on the concept of branding and antecedents of brand loyalty development (Carrol & Ahuvia, 2016; Elsäßer & Wirtz 2017; Haryanto et al., 2016; Keller, 2001; Oliver, 1991, 1999).

2. Brand awareness

Brand awareness, sometimes defined as brand knowledge, is an important antecedent of brand experience, image and loyalty, and the first one in the line of factors affecting brand loyalty (Rubio et al., 2014). It assumes that current and potential customers are aware of the brand presence on the market, its meaning, specific characteristic and personality (Gustafson & Chabot, 2007). Essentially, authors understood brand awareness as association in the mind of customers about a specific brand (Stokes, 1985) measured through brand recognition, brand recall, "top of the mind" and brand dominance, as well as brand meaning for the customers (Aaker, 1991). Kotler et al. (2009) suggest explanation about the brand awareness as the "mirror" of customer ability to recognize and identify the brand in different situations. Moreover Aaker (1996) define brand awareness as the level of brand's presence in the customer mind, i.e. share-of mind, while Kotler et al. (2009) considers brand awareness as one of vital indicators of brand state and insist on its role in the process of decision making about the brand choice caused by the fact that customer prefer buying known brands.

Since the brand awareness leads to the customer preferences regarding the brand and also presents the first step in the process of deciding about buying (Huang & Sarigollu, 2011), it is considered as the key determinants in the process of brand loyalty development (Buil et al., 2008; Keller, 1993; Pappu et al., 2005; Percy, 1987; Tong & Hawley, 2009). Namely, authors insist on the fact that brand loyalty cannot be developed without a high awareness (Pinar, Girard & Eser, 2012)

Brand awareness is considered as the level of customer's knowledge about the brand and it refers to the number of customers who know of the brand. In general, this is the "measure" of the potential and current customers' ability to associate brand meaning and visual components with a particular product or service (Gilles et al., 2002). Consequently, the level of brand awareness has strong impact on a customers' expectations regarding the products and services they are planning to buy or use (Herbig & Milewicz, 1995; Shapiro, 1983). In the process of increasing brand awareness and attracting new customers companies deliver promises about brands and brand benefits. Customer perception depends on the consistency between those promises and the experience in the process of buying or using the brand. Thus, brand awareness and brand experience affect brand image which depends on the meeting customer expectations regarding the brand and the company.

Authors have studied connections between brand attitudes and customer attitudes and emotions regarding the brand assuming that brand awareness affect customer choice as a heuristic effect (customer will buy brand he/she knows about) and effect on expected and perceived quality of the brand (customers heard about the brand and they believe that brand must be good) (Chi, Yeh & Yang, 2009; Hoyer & Brown, 1990; Macdonald & Sharp, 2000). Some of them found that brand awareness decreases customer perception of risks at the same

time increasing their confidence in the buying process, positive attitudes toward the brand and enhance their trust in the brand quality and brand performances (MacDonald & Sharp, 2000; Xingyuan et al., 2010) and also affects customers' feelings and overall perceptions about the company (Joachimsthaler & Aaker, 1997).

Cho et al. (2015) in their research also advocate positive impact of the brand awareness on customer attitudes regarding the brand and also insist on the fact that high level of brand awareness increase customers' purchase intention (Shahid, Hussain & Zafar, 2017) and enhance brand strength and brand loyalty. Namely, brand awareness is often the source of customers' preferences about the brand and the base for their choice, especially in the case often use brand awareness. Similarly, Kang and Kang (2012) found positive impact of brand awareness on the brand loyalty between customers of mobile phones while Aaker (2009) considers brand awareness as prerequisite for brand loyalty. Authors of this paper argue the attitude that brand awareness without brand experience and customers evaluation of the product or service quality cannot be accepted as the reliable predictor of the brand loyalty. In this context, this study hypothesizes:

H1a: Brand awareness has a positive impact on brand experience.
H1b: Brand awareness has a positive impact on brand image.

3. Brand reputation

Brand reputation has become the focus of the marketing strategies as the consequence of the fact that positive brand reputation assumes higher prices and competitive advantages even in the businesses where product differentiation has huge challenge (Loureiro & Kaufmann, 2016). Discussing the reputation of a brand, Walsh and Beatty (2017) explain brand reputation as the customers' overall evaluation of the product or the company based on the customers' reactions on the company's offer, communication and also customer' interaction with the company or its representatives. In this context brand reputation can be understood as the factor of the emotional brand attachment developing (Japutra, Ekinci & Simkin, 2014) as well as strengthening of the brand image and brand loyalty.

Amis (2003) defines brand reputation as the general emotional response of an individual towards a company that is a result of the previous company's actions and customers interactions with the company. According the author this explanation confirms the difference between brand reputation as the meaning and response created over time and brand image which is related to the current perception of a brand held in customer mind. On the other hand, according Fombrun and van Riel (1997) brand reputation can be defined as the overall estimation of the brand from the customer point of view. Kumbar's (2012) understanding of the brand reputation is at the same line; he states that brand reputation is one of the service quality dimensions evaluated by customers during and after the service process.

Certain authors interpret brand reputation as outcomes of processes and past actions (Spence, 1974) of the companies which offered the brand or as set of attributes related to the company (Wigelt & Camerer, 1988). Some of them also insist on the consistency of attributes over time (Fombrun, 1996; Herbig & Milewicz, 1993) and general emotional response of an individual towards a firm after a longer period of time (Amis, 2003). Moreover, Zeithaml (1988) explains brand reputation as an extrinsic cue which is related to the product but is not the part of the physical offer. She considers brand reputation as a significant intangible asset of the company, similarly as Stenger (2014) two decades later. In all these definitions authors

assume that brand reputation includes the values and beliefs of internal and external interest groups of the company (Fombrun & Sahnley, 1990). It is also considered as the result of the flow of information sharing between the organization and individuals or groups of individuals. If these values are positive and consistent over time the reputation of the brand will also be positive (Herbig & Milewicz, 1993).

Aaker (1991) sugessted that brand reputation from the company's perspective presents the level of customers attachment to the brand developed thanks to the brand credibility and trustwortiness in the brand. Brand credibility and reputation are results of customer experience with the brand where promised quality were delivered and customers' expectations satisfied.

In his later research, Aaker (2004) confirmed previous statemensts; his findings showed that customers mostly buy brands with high reputation since they pereive thos brand as more relliable regarding stayint aht the market and providing reasonable quality. They also fill comfortable with the knwoing brands and their reputation. This is especially important for the brands that have to find the way how to become a member of the alternative brands which customers consider in the purchasing process.

Omar, Williams and Lingelbach (2009) argue credibility of and trust in the brand as key antecedents of positive brand reputation. Both dimensions are results of the consistency of company's actions (Herbig, 1997) in the process of providing high quality products and services as well as fulfilling promises delivered to the customers. On the other hand brand reputation leads to higher loyalty and stability of future business operations of the company (Kapferer, 1997) while Abimbola and Kocak (2007) claim that branding and building of reputation are crucial elements for the organizational success. In that context they suggest that competitive brands with high reputation present main factor for attracting new customers and market share growth. Authors who advocate same attitudes suggest that brands with high reputation should focus efforts in strengthening brand image, obviously assuming positive impact of brand reputation on the brand image. Young and Rubicam Group explains brand reputation as brand esteem (elements of Brand Asset Valuator), i.e. customer respect regarding the brand.

Brand reputation is strongly supported by company's reputation especially in the case of services. Reputation of the company is described as the combination of the stakeholders' long-term perception of the company's meaning (what the firm is) and its effectiveness in meeting stakeholders' needs and confirming their expectations (Logsdon & Wood, 2002). Whetten & Mackey (2002) defined brand reputation in this context as the specific type of feedback provided by stakeholders concerning the credibility of brand identity or company's identity. However, Wartick (2002) suggests that companies should focus an attention on the direct customers as the most influential stakeholders.

A lot of studies regarding relations between brand reputation and brand loyalty are provided in recent times. For example, Selnes (1993) found stronger impact of brand reputation on the brand loyalty compared to customer satisfaction, especially in the cases when customers are faced with ambiguity of intrinsic cues affecting decision-making process. Cretu and Brodie (2007) also state that reputation has impact on the customer perception of value and loyalty while brand image influence is focused on the customer perception related to the specific product or service.

Similar relations are transferred in virtual environment. Thus, Casalo et al.'s (2008) study confirmed that brand reputation and satisfaction have a positive impact on website loyalty. Similarly, Caruana and Ewig (2010) found positive influence of the reputation on the online loyalty. Brand image and brand reputation represent closely-related intangible

resources identified as prerequisites for brand loyalty and potential sources of competitive advantages (Amis, 2003; Stenger, 2014). Authors accept the idea that intangible elements in most of the cases present the base for sustainable competitive advantages (Amis, 2003; Clulow et al., 2003;; Hall, 1993). For the researchers in the field of branding and brand management topics related to the relationships between brand image and brand reputation are of the extreme importance.

Hence, this study posits the following hypothesis:

H2a: Brand reputation has a positive impact on brand experience.
H2b: Brand reputation has a positive impact on brand loyalty.

4. Brand experience

Brand experience and its impact on brand loyalty is one of the most studied topics in branding theory (Al-Hawary, 2013; Sahin et al., 2011; Walter et al., 2013; Wulandari, 2016). The authors insist that brand experience presents a major prerequisite for customer-brand relationship and commitment development while Veloutsou (2015) concluded that brand relationship has a critical impact on the brand loyalty. Following this analysis Al-Hawary (2013) confirmed positive impact of brand experience on the brand loyalty. Moreover, others found additional benefit outcomes resulted from positive brand experience such as competitive advantages (Su & Tong, 2015) and intention to purchase (Tolba & Hassan, 2009) except the abovementioned brand loyalty.

Brand experience describes what customers think about the brand (Kumar, Dash & Purwar, 2013) and according previous studies brand experience is related to the customer contact with the brand in the pre-purchase phase, during the process of buying and finally through the product consumption or service interaction (Arnould, Price & Zinkhan, 2000; Brakus, Schmitt & Zarantonello, 2009). Wulandari (2016) explains brand experience in a similar way stating that brand experience is a customer perception that results from the customer's contact with a brand, including similar elements as previous authors in the group of brand contacts. Therefore, brand experience presents customer emotional reactions caused by brand performances but also all attached elements such as additional services, physical dimensions of the shop or employees' attitudes. On the other hand, Brakus et al. (2009) explain brand experience as subjective, internal and behavioral responses on the elements related to the brand such as design, packaging, environments and brand identity which essentially include the same dimensions as "brand stimuli". Moreover Huang et al. (2015) discuss about four brand experience dimensions suggesting band sensory experience, band cognitive experience, brand affective experience and relational brand experience.

Brand experience is identified as a stronger predictor of actual buying behavior than brand personality (Brakus et al., 2009) and one of the important tools for creating brand loyalty and increasing competitive advantages (Chang & Chieng, 2006; Prahalad & Ramaswami, 2004). Moreover, Alba and Hutchinson (1987) suggested that customer brand experience reflects customer's awareness of the brand or brand category, while Rajumesh (2014) claims that brand experience affects brand selection stronger than product attributes and benefits, thanks to its possibility of creating greater trust in the brand (also Ha & Perks, 2005; Zarantenello & Schmitt, 2000). On the other hand looking from the brand managers' perspective brand experience is understood as the customer interaction with holistic offer of

the brand (Klaus & Maklan, 2007) and consequently a vital prerequisite for brand image and brand loyalty strengthening (Prahalad & Ramaswamy, 2004).

Authors sometimes compare brand experience and customer experience. This is a consequence of the fact that customer experience essentially is experience with the brand but also with other dimensions of customer and company interactions. Since all elements of interactions are focused on the customers and their satisfaction, connection between brand and customer experience is inevitable. This holistic understanding is often defined as the customers' brand experience gained from the customers interactions with the organization, personnel, product and the brand. Similarly, Alloza (2008) explains brand experience as a customer perception and feelings in every moment of interaction between customer and brand, whether they face with projected images of the brand or personally interact with and use the brand, or when they are searching information about the brand or talking with others about the brand (Ambler et al., 2002).

Brand experience directly affects choice of the brand in future buying and has more influence than product characteristics and benefits on the customer decision regarding relationships with a particular company. According Bennett et al. (2005) understanding customer experience before purchasing of professional services significantly contribute to the brand loyalty. Furthermore it has positive impact on the customer satisfaction and brand loyalty (Zarantenello & Schmitt, 2000; Ha & Perks, 2005). Namely, positive experience leads to the brand loyalty (Mascarenhas et al., 2005; Murry, 1991) while negative experience in most of the cases cause customer decision to switch to another brand (Aaker, 1991; Hoch, 2002). Following the same line of discussion and conclusions other authors found significant impact of brand experience on customer loyalty (Mohammad, 2017; Walter et al., 2013), considered brand experience as significant antecedents of brand loyalty (Baser et al., 2015) and also suggest both direct and indirect effect of brand experience on brand loyalty (Brakus et al., 2009). Based on previous academic work and empirical studies, next hypothesis is stated:

H3a: Brand experience has a positive impact on brand image.
H3b: Brand experience has a positive impact on the brand loyalty.

5. Brand image

Brand image is an important aspect of the branding and marketing activities with varied definitions and conceptualizations (Dobni & Zinkhan, 1990; Fornell et al., 2006; Low & Lamb, 2000; Martinez & Pina, 2003). Most of the authors describe brand image as the perception of customers in the form of associations regarding the brand in the customer mind. These associations transformed in "a mind picture with tangible, intangible, inherent or acquired facets" (Keller, 1993) based on information collected from public or private sources. The sources and information might be controlled by the company or independent ones, but the most important role for the perception of the brand image belongs to the customer experience with the brand and the company. Consequently, brand image could be considered as the engagement between customer and the brand, whereby the customer reflection of the brand depends on inner motivations and external influences (Borja de Mozota, 2003; Grönroos, 2015). Namely, customers often use brands to identify with the social group which adds the value to the brand experience and improve brand image. In that context, emotional and

symbolic advantages resulted from the brand experience present the most important dimensions of brand associations defined by Aaker, 1992).

Authors (Lee, Lee & Wu, 2009) explain brand image as perceptions of brand associations, feelings and thoughts in customer memory all related to tangible and intangible attributes of the brand or the perception of the brand which is direct reflection of the brand associations linked to the brand name in customer memory (Farquhar & Herr, 1993; Herzog, 1963; Keller, 1993). On the other hand, Low and Lamb (2000) understand brand image as the rational or emotional perception customer attaches to the brand and suggest that every individual has his/her image and perception of the brand. They also insist on the uniqueness of the brand image in regard to competitors' brands again expressed through the tangible or intangible characteristics.

Saleem and Raja (2014) explained brand image as a reflection of a brand in customer memory, i.e. everything that customer spontaneously think when the brand is mentioned or presented. Similar idea was accepted by Mohajerani and Miredammi (2012) who defined brand image as the overall impression about the brand and brand attributes in the minds of the public. These studies lead to conclusions that brand image can be used as the "measure" of the brand strength, uniqueness or favorability of the brand between customer (Borja de Mozota, 2003; Grönroos, 2015) but also sometimes as the synonym for the company's reputation (Kim, 2015). Consequently, authors suggest that companies have to strengthen favorable brand elements and monitor customers respond to branding activities and their commitment to the brand in order to improve brand image and loyalty as antecedents of business performances (Grönroos, 2015).

Brand image develops from the brand awareness, customer believes and information about the brand collected from different sources of information such as marketing channels directed from the company or external source of information such as word of mouth created by previous brand customers, friends or members of the family, but also trough service encounter or customer interaction with the company (Keller, 1993; Suhartanto & Kandampully, 2003). Except the knowledge about the products or services brand image also includes customers' perception of the company's philosophy and the brand quality. A positive brand image might have a positive impact on brand loyalty and customer behavior in the future (Chen & Myagmarsuren, 2011; Kandampully & Suhartanto, 2000; Kim & Kim, 2004; Nguyen & LeBlanc, 1998).

According to Chen and Myagmarsuren (2011) brand image presents subjective perception or mental representation of information about the product and significantly affects customer evaluation of the product or services while Fornell et al. (2006) found positive impact of brand image on perceived quality and customer satisfaction as the potential antecedent of customer loyalty. Other studies also confirmed an impact of brand image on customers' intentions to buy (Ataman & Ulengin, 2003; Batra & Homer, 2004) and willingness to recommend the brand (Rio, Vazquez & Iglesias, 2001) as well as company's business performances (Kim, Kim & An, 2003).

Furthermore, Neupane (2015) and Vazquez-Carrasco and Foxall (2006) were found that the brand image helps to enhance brand loyalty. Moreover, Kayaman and Arasli (2007) suggest developing positive brand image as the prerequisite for customer commitment to the brand and brand loyalty. Ogba and Tan (2009) support this attitude regarding impact of brand image on brand commitment and extend their conclusions showing moderating effects of positive perception of quality and customer satisfaction on the relations between brand image and brand loyalty. As a consequence, companies are aware of the fact that their profitability

comes from the strong positive image of the products or services that leads to customer loyalty (Mirzaee, Rad, & Molavi, 2013).

Gul et al. (2012) developed discussion about brand image and brand loyalty. They found correlation between brand image and brand loyalty and found that both variable have significant influence on the repeat purchase frequency of the product in car industry. These authors also state that brand image presents inevitable factor in the process of brand loyalty developing. Based on theoretical framework and previous empirical research it is hypothesized:

H4: Brand image has a positive impact on brand loyalty.

6. Brand Loyalty

Authors often start to discuss about loyalty with Oliver (1980) and Reichheld and Sasser's (1990) definitions. According to these definitions, loyalty can be understood as the catalyst for the company growth, its profitability and market share (Reichheld & Sasser, 1990) or as consistent behavior and deep commitment to rebuying the same brand without considering alternative brands' offer despite situational influences (Oliver, 1999) while Malik et al. (2013) advocate understanding of a brand loyalty as a relationship between a customer and specific brand also irrespective of competitive brands. Following the same logic Keller (2001) suggest customer's psychological relationship with a brand as the essence of the brand loyalty. Combining these two attitudes Ali and Muqadas (2015) include both perspective in brand loyalty definition - psychological commitment and re-purchase intention while Dehdashti et al. (2012) add long-term relationship to the re-purchase intention and commitment towards the brand.

Similarly, as Oliver (1999), Chegini (2010) and Tolba and Hassan (2009) relates loyalty with positive behavior, repurchase, support and commitment to the brand, while Rai and Srivastava (2012) stress category of preferences and customer readiness for recommending the brand. They stress that "attitudinal loyalty is based upon the strength of preference and willingness to recommend" (Rai & Srivastava, 2012, p. 66). On the other hand according to Hsieh, Pan and Setiono (2004) positive brand image increase likelihood that customer will buy the brand and according to Su and Tong (2015) increase competitive advantage. Certain authors discuss about brand loyalty as one of antecedents of brand equity such as Buil et al. (2008), Yoo and Donthu (2001) or Tong and Hawley (2009). Day (1969) is one of the rare authors who consider brand loyalty as the consequence of the "…rational decision made after an evaluation of the benefits of competing brands" (p. 35).

In literature and research authors argue for dominance of the attitudinal or behavioral loyalty, depending on the type of industry, product or services (e.g. Ali & Muqadas, 2015; Iglesias et al., 2011) or discuss about cognitive and behavioral loyalty (Severi & Ling, 2013). In that context attitudinal loyalty is understood as the customer internal dispositional commitment and connection with a brand (Casidy & Wymer, 2015, 2016; Chaudhuri & Holbrook, 2001; Haryanto et al., 2016) which result with the relationships between the brand and customer (Ramaswami & Arunachalam, 2016). Authors advocate impact of different factors as antecedents of brand loyalty such as brand relations and experience, customer satisfaction, brand awareness and reputation as well as brand image (Brexendorf et al., 2010; Haryanto et al., 2016; Rubio et al., 2015; Russell-Bennett et al., 2007). The assumption about brand commitment leads to the discussion about emotional nature of the loyalty (Elsäßer &

Wirtz 2017; Rauyrue & Miller, 2007); Dick and Basu (1994) consider latent loyalty while Gounaris and Stathakopoulos (2004) suggest covetous loyalty. Ultimately Ercis et al. (2012) suggest two types of loyalty - full loyalty and brand loyalty and also two sub-dimensions of brand loyalty, affective brand loyalty as the emotional attachment between a customer and a brand assuming that those customers would not switch to another brand or company and continuance loyalty typical for the customers who buy the same brand by habit and who prepare to switch to another brand when they get opportunity to get better conditions.

Most of the authors suggest strong connection between attitudinal and behavioral loyalty primarily understood as the attitudinal loyalty impact on the customer behavior i.e. rebuying and staying at the company. They insist on the fact that customers look for the symbolic and hedonistic benefits (Hollebeek et al. 2014) in the brands to which they developed attitudinal loyalty. As the consequence in these cases attitudinal loyalty leads to the behavioral loyalty and companies' profitability and performances are increasing. In the opposite case, when attitudinal loyalty doesn't affect behavioral loyalty companies will not experience higher revenue (Srivastava & Kaul, 2016; Oliver, 1997; Watson et al., 2015). Namely, the absence of behavioral loyalty may be caused by lack of financial resources, scarcity of the product in specific market or lack of information about alternatives (Gounaris & Stathakopoulos, 2004; Oliver, 1997; Puligadda et al., 2012). On the other side, behavioral loyalty expressed as rebuying, without customer emotional connection with the brand or the company, provides only short-term benefits for the company. This is a consequence of the fact that situational stimulus will initiate rebuying such us competitors' campaign or lack of the specific products or brands, but without strong reasons for staying loyal such as service quality (Alves & Raposo, 2007; Cronin & Taylor, 1992; Dado et al., 2011), satisfaction with experience and overall image (Helgensen, 2006; Walker, 2009) customers will not develop long-term connection, commitment and brand loyalty.

Discussion regarding brand loyalty includes an analysis of brand loyalty antecedents which is classified as the consumer antecedents, brand antecedents, social antecedents, corporate antecedents, relational antecedents (Gupta, Schivinski & Brzozowska-Wos, 217). One of the most studied and discussed antecedents of brand loyalty is brand experience and customer satisfaction with the brand which proved its direct impact on brand loyalty (Amoako et al., 2016; Hultman et al., 2015; Jorgensen et al., 2016; Rubio et al., 2015; Russell-Bennett et al., 2007). Following the logic of the uncertainty reduction theory designed by Patterson (2016) customers use brand image and brand reputation as the most important brand antecedents for reducing the risk and creating positive attitudes regarding the brand and the company.

Against the background outlined in chapters above, we developed a conceptual model. Conceptual model is shown on Figure 1.

Figure 1: Conceptual framework
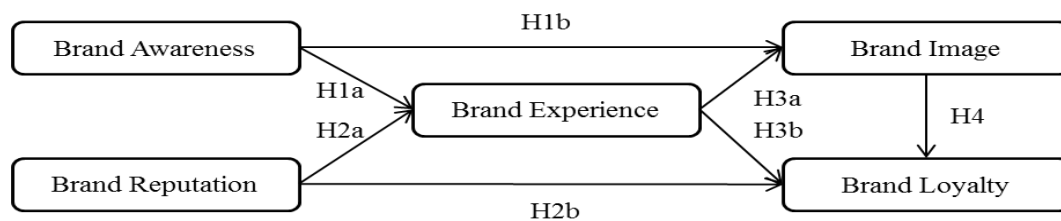
7. Global vs. Local brands – Are there differences?

Increasing globalization of the business and marketing operations cause also brand internationalization and authors conduct a lot of research concerned brand experience, brand image and brand loyalty as well as dimensions and elements that affect causality between these categories (Sahin et al., 2011; Sengupta, 2014; Walter et al., 2013).

Accepting reality of increasing number of globalized brand and also the fact that local brands are developing despite business globalization, we based our study on the research and analysis of one global and local coffee brand. We tested the nature and strength of the relations between brand awareness and reputation and brand experience, as well as impacts of brand experience and brand image on the brand loyalty.

8. Methodology

In order to empirically test the outlined hypotheses, we conducted a quantitative study using paper-and-pencil survey. The survey was conducted on a student sample in Bosnia and Herzegovina, focusing on two brands of coffee: Nescafe (a well-recognized global brand) and Zlatna Dzezva (one of the most known local brands). Student sample is deemed as adequate since student population is one that takes care about coffee rituals, while coffee is taken as a brand category where involvement is high.

The questionnaire was composed using the established measurement scales for brand awareness and brand reputation (Yoo et. al, 2000), brand reputation and brand experience (Sengupta, 2014), brand image (Dodds et. al, 1991), brand loyalty (Lee, Knight, & Kim, 2008). Responses were measured on a 7-point Likert scale where 1 = Absolutely disagree and 7 = Absolutely agree. A between-sample design was used to reach the respondents; hence, each respondent was randomly assigned to state their responses for one out of two brands, in the case they are familiar with it and they have experienced it.

A total of 185 responses were collected, where 113 were for Nescafe and 72 for Zlatna Dzezva. Respondents were of age between 19 and 39 (mean age = 22), and 65% of them were female. Most of the students (87%) are students of the 1st cycle of studies (undergraduate) while the rest were at master's/post-graduate studies. The two samples separately are balanced in terms of the demographic characteristics of respondents.

9. Results

Before testing the hypotheses, we conducted the assessment of the reliability and validity of the measures (Fornell & Larcker, 1981) used in the model using a confirmatory factor analysis in LISREL 8.71. In both cases, measurement model showed a good fit, for Nescafe (χ^2 = 158.25; df = 80; χ^2/df = 1.98; RMSEA = 0.08; NNFI = 0.96; CFI = 0.97) as well as for Zlatna Dzezva (χ^2 = 142.90; df = 80; χ^2/df = 1.79; RMSEA = 0.09; NNFI = 0.96; CFI = 0.97) fit indices were acceptable. In the Table 1, reliability and validity properties for both models are shown.

Table 1: Measurement model properties

Construct (# of items)	λ Nescafe	λ Zlatna Dzezva	CR Nescafe	CR Zlatna Dzezva
Brand awareness (3 items)	0.74-0.93	0.49-0.70	0.87	0.74
Brand reputation (3 items)	0.71-0.91	0.59-0.83	0.86	0.80
Brand experience (3 items)	0.82-0.91	0.94-0.99	0.91	0.95
Brand image (3 items)	0.74-0.81	0.79-0.93	0.81	0.91
Brand loyalty (3 items)	0.82-0.92	0.89-0.97	0.91	0.96

Notes: λ = loading, CR = composite reliability;

As we can see, all factor loadings are acceptable and significant (higher than 0.50) except for one item in brand awareness of Zlatna Dzezva which is of marginal value (λ = 0.49). Furthermore, composite reliabilities are all higher than 0.70, hence we can conclude that the measures are reliable. We further test for the validity of measures assessing their correlations and discriminant validity in Table 2.

Table 2: Correlation matrices and discriminant validity assessment

#	Construct	1	2	3	4	5
Nescafe						
1	Brand awareness	0.84				
2	Brand reputation	0.59	0.82			
3	Brand experience	0.28	0.39	0.78		
4	Brand image	0.34	0.46	0.54	0.88	
5	Brand loyalty	0.39	0.43	0.61	0.54	0.88
Zlatna Dzezva						
1	Brand awareness	0.71				
2	Brand reputation	0.63	0.75			
3	Brand experience	0.46	0.52	0.93		
4	Brand image	0.47	0.57	0.63	0.88	
5	Brand loyalty	0.62	0.60	0.65	0.64	0.94

Notes: Square-roots of average variances extracted (AVEs) are shown on the diagonal in bold; correlations are shown below the diagonal;

All correlation coefficients are significant and of moderate size (ρ Nescafe (0.28, 0.61); ρ Zlatna Dzezva (0.46, 0.65)). Furthermore, all correlation coefficients between constructs are lower than the square-roots of average variances extracted for the respective constructs, hence, the discriminant validity criterion is satisfied (Mackenzie, Podsakoff & Podsakoff, 2011).

After assessing the measurement model, we proceeded with the structural model evaluation (Anderson & Gerbing, 1988), using covariance-based structural model equation analysis in LISREL 8.71. Two models were assessed separately, and results are presented in Table 3.

From the Table 3, we can first observe that both structural models have acceptable model fit that allows for further interpretation of parameters. When it comes to hypotheses test, it can be seen that brand awareness does not influence brand experience neither in the case of global brand (Nescafe) or in the case of local brand (Zlatna Dzezva), hence, H1a cannot be supported. However, brand awareness is consistently positively related to brand image, both in the case of the global brand (Nescafe, $\beta = 0.30$; p<0.001) and in the case of the local brand (Zlatna Dzezva, $\beta = 0.70$; p<0.001) which gives the strong support for the H1b.

Table 3: Hypotheses test

H	Relationship	β Nescafe	R^2 Nescafe	β Zlatna Dzezva	R^2 Zlatna Dzezva
H1a	Brand awareness → Brand experience	-0.08^{ns}		0.30^{ns}	
H2a	Brand reputation → Brand experience	0.48^{**}	0.17	0.27^{ns}	0.13
H1b	Brand awareness → Brand image	0.30^{***}		0.70^{***}	
H3a	Brand experience → Brand image	0.57^{***}	0.53	0.28^{***}	0.68
H2b	Brand reputation → Brand loyalty	0.03^{ns}		0.40^{***}	
H3b	Brand experience → Brand loyalty	0.55^{***}	0.55	0.40^{***}	0.67
H4	Brand image → Brand loyalty	0.23^{**}		0.18^{ns}	

Model Fit Nescafe $\chi^2 = 161.52$; df = 82; $\chi^2/df = 1.97$; RMSEA = 0.09; NNFI = 0.96; CFI = 0.97

Model Fit Zlatna Dzezva $\chi^2 = 188.26$; df = 82; $\chi^2/df = 2.30$; RMSEA = 0.09; NNFI = 0.95; CFI = 0.95

Notes: β = standardized coefficient; R^2 = coefficient of determination; one-tailed significance test; ** - $p < 0.05$; *** - $p < 0.001$; ns – not significant;

On the other hand, when it comes to the relationship between brand reputation and brand experiences we can observe differences across samples, since brand reputation positively and significantly impacts brand experience ($\beta = 0.48$; $p<0.05$) for the global brand (Nescafe) while the same effect is not significant ($\beta = 0.27$; $p>0.10$) for the local brand (Zlatna Dzezva). This gives only partial support for the hypothesis H2a. The results are opposite when it comes to the relationship between brand reputation and brand loyalty. Namely, for the global brand (Nescafe) the effect of brand reputation on brand loyalty is not significant ($\beta = 0.03$; $p>0.10$), whereas it is strong and positive in the case of the local brand (Zlatna Dzezva, $\beta = 0.48$; $p<0.001$), which again only partially confirms the H2b.

In the case of brand experience, it can be observed that in both tested models brand experience is a significant predictor of the related variables. Namely, brand experience positively and significantly impacts the brand image ($\beta = 0.57$; $p<0.001$) of a global brand (Nescafe) and it positively and significantly impacts the brand image ($\beta = 0.28$; $p<0.001$) of a local brand (Zlatna Dzezva), which gives strong support for H3a. When it comes to the relationship with brand loyalty, again brand experience positively and significantly impacts brand loyalty (Nescafe, $\beta = 0.55$; $p<0.001$; Zlatna Dzezva, $\beta = 0.40$; $p<0.001$). This confirms H3b as well.

Finally, our results are mixed in the case of the relationship between brand image and brand loyalty. Namely, while brand image positively and significantly impacts brand loyalty ($\beta = 0.23$; $p<0.05$) for the global brand (Nescafe) it does not impact brand loyalty ($\beta = 0.18$; $p>0.10$) of the local brand (Zlatna Dzezva). This again gives only partial support for the H4.

When it comes to the explanatory power of the models, it explains 17% of the variance in brand experience in the global brand case and 13% of the variance n the local brand case, while it is able to explain substantial amount of variance in brand image (Nescafe, 53%; Zlatna Dzezva, 68%) and brand loyalty (Nescafe, 55%; Zlatna Dzezva, 67%).

10. Conclusion

Conducting this research outside developed countries environment will help to possible generalization of the understanding the impact of branding and brand dimensions in different context of competition between global and local brands. The research contributes to the development of theoretical base for branding and brand management in developing countries,

especially post-transitional ones where local companies and brands are facing with strong competition of global brands.

While our results show consistent findings across global and local brands for some relationships, we observe strong differences in other cases. Primarily, we can state that brand awareness positively impacts brand image for both types of brands which is in line with theoretical assumptions that brand awareness is one of the predispositions for developing and building brand image.

On the other hand, we observe interesting variations when it comes to brand experience. Firstly, it can be seen that both selected predictors of brand experience (brand awareness and brand reputation) do not really do a good job in explaining the occurrence of brand experience, since the explanatory power in the case of both global and local brands is less than 20% of the variance. Hence, future research should focus in detecting other relevant variables that are able to capture what explains and determines brand experience. We can also see that in both cases pure notion of existence of a brand (brand awareness) does not contribute to the brand experience. While on the other hand brand reputation plays an important role for global brands and not for the local brands. This implies that brand reputation carries the "halo" effect of the global brand (Batra, Ramaswamy, Alden, Steenkamp & Ramachander, 2000), signaling quality and other positive characteristics, which help in triggering brand experience dimension. On the other hand, we can see that local brands do not carry this effect; hence, reputation of the local brand does not play a role for brand experience. In the case of the local brand, possible triggers of brand experience might be related to the tradition and/or reference groups. This is especially the case in the category of coffee which is connected to rituals and habits consumers have and which might then be also related to the experiences consumers bring from family environments and/or from socializing with the in-groups (friends, relatives etc.)

Even though our findings are mixed and inconclusive for the determinants of brand experience, there is a very clear picture for the consequent effects of brand experience on brand image and loyalty. Namely, in cases of both global and local brands, brand experience is strong and positive predictor of brand image and brand loyalty. This shows the importance of the brand experience concept, that essentially places all potential promises under the verification magnifier and hence the better the brand experience, the higher the brand image perception as well as the brand loyalty – nevertheless the positioning of the brand (i.e. be it global or local brand).

Also, in the case of brand image, there is a consistent support of our hypotheses across brands/samples, that demonstrate that brand image can be explain with the level of brand awareness and with the brand experience. Both predictors contribute to positive brand image formation in consumers' minds.

Finally, in the case of brand loyalty, the results are again mixed. Whereas experience is consistent and positively related to brand loyalty, brand reputation is important for brand loyalty only in the case of local brand, while brand image is important for the brand loyalty only in the case of the global brand. In the case of brand reputation, these results, tied with the previously explained results for brand experience, paint an interesting picture of the differential effects of reputation in the global/local brand scenario. While reputation is important for brand experience for global brands (and not for local brands) – i.e. it transfers the "halo" effect and contributes to the experiential domain – it is at the same time more important for loyalty in the case of local brands (and not in the case of global brands). The latter shows that loyalty to the local brands can be triggered if the local brand is strong and

reputable at the domestic market and goes hand in hand with the predisposition that perceptions of consumers about the local in developing countries is usually that they are of lower quality and inferior (Winit, Gregory, Cleveland & Verlegh, 2014) – however – if the brand is strong and reputable – then the consumer will consider buying it again and will be loyal to it. However, global brands do not have such "luxury" and their reputation carries them towards the experiential domain – further in the chain, the reputation does not help in repeated purchases, showing that global brands need to excel in other elements for consumers to be loyal to them. One of these elements is brand image – for which it is shown that positively impacts loyalty to global brands – carrying symbolic and social elements with it, while it does not play a role for local brands.

Our results can also give important insights for managers of both global and/or local brands in developing countries. Namely, it is clear that in order to trigger brand experience, especially when entering the market, global brand managers should put more attention to the reputation of their brands since it carries the desired initial effect. On the other hand, this same reputation does not carry the effect further in the chain of relationships, and for keeping the consumers global brand managers should insist on good brand experiences and developing a good brand image.

Managers of local brands should search and clearly define what triggers brand experience. Our study shows that brand awareness and brand reputation is not enough, and it is for further research to assess what are the determinants. Possibly, local brand experience can be boosted with the elements of historical connection, tradition and relation with reference groups and habitual behavior of consumers. However, local brand managers should know that the reputation of their brands is important for consumer loyalty, and that it plays way more important role than brand image. Finally, the role of brand experience could not be stressed enough since it is shown to be very beneficial for both image and loyalty to local brands.

Limitations of this research are connected with the fact that only one product was in the focus of the research, as well as specific group of respondents. The results could be also affected by the category of product. Not only highly involved the coffee brand has also specific role in local lifestyle and consequently assume strong connection with the brand. Finally, for developing countries local brands have different status and position, depending on the time when they appeared on the market. The local brand in this research has long positive history hence another, younger brand might provide different results. All mentioned limitations leads to conclusion that further research regarding other types of products and different target segments as well as brands with longer or shorter history should be conducted.

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HUMAN RESOURCES INFORMATION SYSTEMS AND ITS IMPACT ON ORGANISATIONAL PERFORMANCE

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Abstract

Using ICT in delivering human resources management (HRM) services is important for organisation's performance and a strategy to achieve a competitive advantage and has become an imperative. Human Resources Information System (HRIS) is an instrument used to collect, record, and store, analyse and retrieve data related to organization's human resources. The HRIS provides multiple HRN services from operational assistance in collecting, storing and preparing data, executing and controlling processes, reducing HRM labour costs, and providing information to the management enabling them to make quality HR strategic decisions. As the greatest benefits to the implementation of HRIS, some research studies perceive the quick response and access to information, but as the greatest barrier they see lack of sufficient financial support. According to the research findings, ICT enables HR professionals more efficient access and dissemination of information. Goal of the paper is to explore how usage of HRIS affects organisational performance in terms of service quality, level of productivity, profitability, rate of innovation, stock market performance and environmental matters.

Keywords: IT management, human resources, human resources information system, organisational performance,

JEL classification: M15, O32, O33, L25

1. Introduction

The society and economy today is dominantly characterised by rapid development, growth and expansion of the information and communication technology (ICT). Such a development causes increasing needs for firms and individuals with knowledge and competence of ICT area. There is broad evidence proved by number of studies that new information and communication technologies are key element of a breakthrough into rapid growth (Abubakar & Tasmin, 2012). The development of new technologies and their proliferation throughout the entire economy and society influences productivity and organisational performance (Alwahaishi & Snasel, 2013).

The main focus of the research was the use of information and communication technologies (ICT) in human resources management (HRM). Recent technological development leads to development of human resources information systems (HRIS). The numerous studies have explored to what extent HRIS usage impacts organizational performance. Previous researches on that topic have been conducted predominantly on exploratory level and in the area of limited geographical context or solely on the single aspects of HRIS, although HRIS usage has number of different aspects, such as type of HRIS, areas of HRM that are covered by HRIS, availability of self-service in HRIS for both managers and employees, and extent of HRIS outsourcing. Therefore, the aim of this dissertation research was to get an insight into impact of HRIS usage from different perspectives (type, areas, self-service, and outsourcing) to organizational performance with the utilization of global data set, leading to global analysis.

The intention of this research was to contribute to the better utilization of HRIS usage in organizations and help in improving the approaches used in HRIS usage in organizations, with the goal to maximize its impact to organizational performance.

2. Literature review

2.1. Impact of information and communication technologies to the organizational performance

The changes the ICT is affecting are not limited to one single sector of society, but ICT transforms all sectors of the economy and influences society on many different ways (Xue, Liang & Boulton, 2008; Rogers, 2010). The organisations must constantly take into account the ICT development and evolution influencing the technology landscape and affecting the society behaviour (Mouelhi, 2009; Okello et all, 2014). Some of the most recent ICT trends include, among others, business intelligence, social media, consumerware, cloud computing, information security, big data and wireless internet access.

The best description of ICT says that it is a *"general purpose technology"* beyond the traditional capital investment. (Bresnahan and Trajtenberg, 1995; Selwyn (2004) defines the term ICT as *"an umbrella term for a range of technological applications such as computer hardware and software, digital broadcast technologies, telecommunications technologies such as mobile phones, as well as electronic information resources such as the world wide web and CDRoms"*. According to Weill and Broadbent (2000, p. 333) ICT systems can be defined as *"the base foundation of IT capability, delivered as reliable services shared throughout the organisation and coordinated centrally, usually by the information systems group"*.

Melville, Kraemer, & Gurbaxani, (2004), defines "*ICT organizational value"* in terms of effect of ICT to the organizational performance. ICT plays a critical role in supporting

organizational strategy implementation and has gain an enormous impact on everyday life of individuals as well as day-to-day business running of organizations. (Santos Vieira et all, 2013, Oulton, 2012). Therefore ICT has become a strategic organisational resource (Benamati and Lederer, 2001). ICT enable organisations to implement significant changes in the areas of process reengineering, governance model, flexible HRM, product development and outsourcing (Gera and Gu, 2004, Baldwin et al., 2003).

Although ICT contribute to the organisational performance improvement (Saltari et al., 2013; Outlon, 2012), usefulness and utilisation of ICT resources in terms of organisational performance are depending on type of ICT, organisational structure, organizational environment and attitude of the management (Brynjolfsson et al. 2002; Dewan and Kraemer 2000). Therefore, in order to achieve planned strategic goals, companies have to adopt and implement ICT as a part of organizational system (Hitt, Wu, & Zhou, 2002; Garcia-Canal, Rialp-Criado & Rialp-Criado, 2013). A various surveys explored the connection between ICT and its effect on organizational performance, and they posit that the driver of IT impact is not the investment in the ICT, but the actual usage of the technology (Devaraj and Kohli, 2003).

Considering its importance for an organisation, its rapid change and the increasing complexity of application, the management of the organisation is faced with the challenges of ICT implementation which requires different mechanisms for reducing the problems of complexity and rapid ICT change (Benamati and Lederer, 2001). In that sense there were identified mechanisms such as; training, support from suppliers, durability, in-house procedures, and consulting services (Benamati and Lederer, 2001, Oulton, 2012, Garcia-Canal et all, 2013, Santos Vieira et all, 2013). There are still uncertainties about how ICT contributes to organizational performance (Sambamurthy et all, (2003). A literature review shows divergent concepts of the interrelations between ICT and organizational performance. The different dimension of ICT organizational value are affected by different internal and external factors such as corresponding organizational resources and organisational environment (Bharadwaj, 2000; Melville et all, 2004, Santos Vieira et all, 2013). Other authors summarize that the use of ICT can create organizational competitiveness but putting greater concern on human and intangible capabilities than tangible capability of organisation to determine its performance (Sambamurthy et all, 2003, Piccoli & Ives, 2005).

The greatest benefits of ICT for an organisation can be realised if ICT investment is aligned with new strategy, organisational redesign, core process redesign, and value reengineering, that should be transformed into practice trough HRM implementation and effectiveness (Pilat, 2001, Gera and Gu, 2004, Baldwin et al., 2003, Dehning and Stratopoulos, 2003).

The rapid (ICT) expansion during the last 15 years has created a vibrant environment of favourable possibilities and interesting challenges for a vast number of organisations. ICT is providing efficient, easy to use, inexpensive and appropriate communication equipment and tools. It was found that adoption of ICT in many organisations has a very positive effect on the organization's performance (Mouelhi, 2009; Gavrea, Ilies & Stegerean, 2011). In that sense it can be concluded that organizations that use ICT are developing faster, investing more often, and they show as more productive and profitable.

2.2. Challenges in contemporary human resources management

Human resources management (HRM) function within the organisation supports development of organisation specific kompetences and abilities as an outcome of organizational learning.

The contemporary HRM function is faced with a number of challenges regarding its purpose, performance and effectiveness (Rogers and Wright, 1998, Kesti et al., 2011, Di Paolo et al., 2010). Concerning the introduction of ICT into HRM processes, a major challenge for strategic HRM today and in future will be to institute a solid, sound, consistent, consequent, interconnected and efficient model and metrics for organizational performance (Maguire and Redman, 2007, Panayotopoulou and Papalexandris, 2004, Hiltrop, 1996, Boudreau and Ramstad, 1999).

The research studies show that HRM has a more significant influence on organisation's performance in terms of growth and innovation, than on financial perspective (Brewer & Gajendran, 2009; Strohmeier and Kabst, 2012). Other studies exploring the linkages between HRM and organisational performance show that still there are a little evidences indicating that HRM is tied up with high organizational and financial performance (Kesti and Syväjärvi, 2010). Nevertheless, HRM policies and practices can support and foster employees' behaviour and attitudes towards strengthening the organizational competitive strategy (Kesti, 2012, Becker and Huselid, 2006, Becker et al., 2001).

New challenge for HRM is a practice of outsourcing of HRM function and emerging of human resource intermediaries (HRIs), with purpose to deliver HR services to both public and private sector organisations (Kock et all, 2012, Comacchio et al., 2008). HRM systems are faced with challenge on how to avoid short-term and reactive assignments of standardized HR solution delivery and concentrate on long-term relationships, targeting the entire HR processes within an organisation and its relations with outside environment (Kock et all, 2012, Kalleberg and Marsden, 2005, Ulrich et al., 2008). There are evidences of increased outsourcing at least one HRM process with tendency to broaden their range and number (Scullion and Starkey, 2000, Di Paolo et al., 2010)

Theoretical significance of strategic HRM as derived from resource based theory of organisation emphasizes human resources as essential factor in improving and maintaining organizational success (Lengnick-Hall, Lengnick-Hall, Andrade & Drake, 2009; Casimir, Lee & Loon, 2012)

The research studies dealing with HR outsourcing have been generally focused on multinationals (MNC), and less on European SME companies (Brewster et al., 2007, Silvestri and Pilati, 2005). SMEs are an important group of clients to HRIs, because they usually have limited resources and underdeveloped internal HRM competences (Cardon and Stevens, 2004; Kitching, 2008; Klaas, 2003).

2.3. The role of information and communication technologies in human resources management

The studies about HRM show that modern HR function in an organisation has evolved from simple personel administration to development and management of human resources. In that sense, HRM became strategic partner and change agent in achieving organisational objectives (Ulrich, 1997, Conner and Prahalad, 1996, Ramstad, 2009). However, in order to fully realize its' potentials, HRM practices should be aligned with organizational strategy and technological (Barney, 1991).

Cronin et al. (2006) emphasize the crucial influence of new technologies in establishing and improving of effective HRM systems. An HRM function supported with ICT can create an encouraging and supportive environment that motivate employees to achieve superior performances in generating and sharing knowledge aimed for the organization in

attaining its business strategy (Scott & Davis, 2007, Magnusson & Martini, 2008). Corso, Martini & Pesoli, (2008), consider ICT as a concept that can introduce such a change within organizations.

Implementation of ICT can affect the all HRM processes, as from personnel administration, personnel acquisition, employee selection and recruitment, employee orientation and integration, performance assessment, employee career development, organisational communication, until employee training and development and organizational design and culture development (Di Paolo, Corso and Gastaldi, 2011, Zahra, and Scholar, 2013). leveraging and combining ICT and HRM as key enabling factors can influence. The organizational culture, organisational knowledge management and organisational learning processes can be strongly affected by leveraging and combining ICT and HRM as key enabling factors (Corso and Paolucci, 2001) improving that way organisational performance and competitive advantage (Cronin et al., 2006).

The main reasons HRM function uses ICT investments are achievement of effective HR administration and the HR staff costs reduction (Bondarouk and Ruel, 2009). The ICT investment has also importantly affects organisational performance in sense of quality of organisational communication and climate, and quality of HR services (Lippert and Swiercz, 2005, Di Paolo, Corso and Gastaldi, 2011, Troshani, Jerram, & Hill, 2011).
The scarce finance investment, resistance to organizational change, and unskilled employees' in using the ICT can be the significant restraining factors for the ICT investment effectiveness. Other, less relevant barriers are: poor commitment of management team, unsatisfactory coordination and communication, inadequate specific competences and procurement of unsuitable applications (Corso and Paolucci, 2001, Collins and Smith, (2006, Cronin, Morath Curtin and Heil, 2006).

The evidences from research conducted show that the implementation of ICTs contributed to the change in organisation of HRM function in a very limited measure. In some cases investment in ICT caused appearance of new organizational procedures in HRM, but in some other led to the different distribution of activities. In lot of cases explored, the only effect was an improvement of HRM competences in terms of planning and control and performance evaluation (Jorgensen et al., 2006, Jorgensen, Hyland and Kofoed, 2006, Di Paolo, Corso and Gastaldi, 2011; Rice & Leonardi, 2013).

ICTs in HRM can be used in two different ways: (1) Supporting the current activities in HRM and improving its efficiency and quality of work, and (2) Changing the HRM processes and innovating existing practices. In that sense it possible to identify the four types of ICT used within HRM function in an organisation such as operational support, work support, change support and strategic support (Zahra and Scholar, 2013). The majority of organisations use the ICT as an operational support with a limited impact on both existing and innovative processes. The operational support considers generic HR administration, operational personnel management, performance management, and career management. ICT is widely used in HR planning and control, employee performance management, career and compensation management. Factory role of ICT is mirrored in supporting routine activities, while as Change Lever, ICT is as a key tool for innovating HR processes of organizational design and development and internal communication (Bharadwaj, 2000, Santhanam and Hartono, 2003). The Strategic Lever type of ICT use considers being as relevant for both managing HR processes and redesigning them.

The ICT is becoming a Virtual Workspace, creating new innovative and efficient organizational models enabling collaboration, communication and empowerment of

employees and providing them with features such as *"knowledge sharing, internal and external social networks and active involvement at all levels"* (Corso et al., 2008; Zahra and Scholar, 2013).

Recently, the HRM function within organizations and organisation itself are positively affected by ICT use enabling different new effective work features like paperless office (Doran, 2003, Wali, 2010), time management, databases, teleworking (Baloh and Trkman, 2003, Wali, 2010), transaction processing and reporting (Broderick and Boudreau, 1991), E-recruiting, for staffing and employee development through internet, (Baloh and Trkman, 2003). The list is not exhausted and practically every day it can be added a new feature making work easier and more efficient.

Human resource Information System (HRIS) as an innovative approach to HRM is an outcome of ICT development and its use in HRM, as two essential organisation's resources. HRIS enables organisations to increase effectiveness of HRM and improve overall organisation's performance (Lippert and Swiercz, 2005, Troshani, Jerram, and Hill, 2011). Organisation's HRIS can be defined as a system which is acquiring, storing, manipulating, retrieving and distributing relevant information about its human resources (Kavanagh, Thite, and Johnson, 2012). Various authors under HRIS consider various terms; computer based HRM, e-HRM, HR portals, web-based HR, HR intranet and virtual HR (Lengnick-Hall and Moritz, 2003, Rouel et all, 2004). Recently, HRIS role has moved to HRM strategy and policy level serving organisation's needs such as selection and recruitment, employee compensation and performance management, HR self-service and HR planning alignment with the organisation's planning (Bell, Lee, and Yeung, 2006, Lengnick-Hall and Moritz, 2003).

In that sense, the HRIS is the part of MIS with the mission to provide the information regarding human resources in the organization and facilitate the decision making processes in this regard (Boateng, 2007; Takeuchi, Chen & Lepak, 2009). In further development HRIS has been transformed from basically administrative role to the valuable foundation of tenable organisational performance (Boateng, 2007; Singh & Raghuvanshi, 2013; Obeidat & Abdallah, 2014). It has becoming a key driver for development and improvement of organizational effectiveness (Wright & McMahan, 2011; Tong, Tak & Wong, 2015; Yekani, 2016).

Following conclusions are emerging from the problem definition that is used as foundation of the relevance of proposed dissertation thesis. Impact of the information and communication technologies to the organizational performance has become widely accepted as one of the most important issues for both practical and theoretical improvements in the area of business economics. In the same time, due to the strong advances in highly sophisticated technologies, number of challenges in contemporary human resources management has emerged. Finally, it has become evident that the acceptance of ICT and its implementation in human resources management has become one of the critical issues for organizations success. These conclusions are leading us to important field that investigates impact of human resources management to organizational performance, which will be discussed in the next section.

Previous studies on HRIS are mainly exploratory, with the geographically limited focus of the research. Those studies did not explore different aspects of HRIS usage in organizations and its impact to organizational performance - at the global level. Taking this into account, and especially if we take into consideration impact of ICT to organizational performance in general, there is a need to conduct a research on the impact of HRIS to organizational performance, on the global level and from different perspectives of HRIS usage.

3. Methodology

In the research the usage of information and communication technologies (ICT) in human resources management (HRM) has been explored. Recent technological development lead to development of human resources information systems (HRIS), but the question arises to what extent HRIS usage impacts organizational performance. Previous research on that topic have been conducted only on exploratory level (Strohmeier et al., 2009; De Alwis, 2010), in the area of limited geographical context (Panayotopoulou et al., 2007), or solely on the single aspects of HRIS (e.g. Storhmeier et al., 2009). In addition, HRIS usage has number of different aspects, e.g. type of HRIS, areas of HRM that are covered by HRIS, availability of self-service in HRIS for both managers and employees, and extent of HRIS outsourcing. Therefore, the purpose of this research was to get an understanding into impact of HRIS usage from different perspectives to organizational performance.

Based on the research of Nuasair and Parsa (2007) and Ruel and Bondaruk (2009) on the impact of the critical factors that influence both HRIS and overall organizational performance, the hypothesis saying that categories/classes of overall organizational performance are independent of usage or non-usage of HRIS is developed. Overall organizational performance (OOP) is determined as weighted sum of partial performances.

$$overall\_organizational\_performance = \sum_{i=1}^{n} w_i * partial\_performance_i \qquad (1)$$

Partial performances are: Service quality, Level of productivity, Profitability, Rate of innovation, Stock market performance, Environmental matters and parameters. In experimental part have been assumed different scenarios for setting up weights (i.e. equally distributed, Pareto distributed, "commons sense", etc.).

These conclusions guide us to the development of research hypothesis, presented at Figure 1 and described below. The hypothesis construction was supported by the previous research ((Nuasair and Parsa (2007) and Ruel and Bondaruk (2009)).

Figure 1 Research model
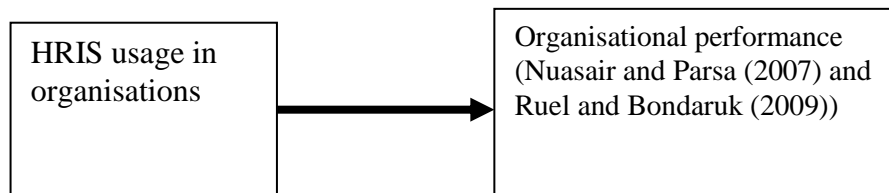
Source: Authors work

The Cranfield Network on International Human Resource Management (CRANET) Survey Research Instrument has been used, containing questions relevant for this research. Data collected for the purpose of the survey are made available from partners of the CRANET organization, and it contains 6.258 responses from 32 countries to the questionnaire, which presents a representative sample for the research.

The research hypothesis presumes that categories/classes of overall organizational performance are independent of usage or non-usage of HRIS. Organizational performance has been measured as a composite measure of six different dimensions (service quality, level of productivity, profitability, rate of innovation, stock market performance and environmental matters). Cronbach's alpha has been be used in order to test validity of composite measure of organizational performance.

Usage of HRIS has been measured by the nominal variable with two values (usage of HRIS, no HRIS). Therefore, the hypothesis has been tested with t-test or Mann-Whitney test, using composite measure of organizational performance as dependent variable and usage of HRIS as independent variable. Mann-Whitney has been performed using each of the variables measuring organizational performance separately (OP1-OP6) as dependent variables.

In that respect the research constructs for measuring organizational performance and measuring usage of HRIS from CRANET survey has been defined. Constructs cover following variables: OP1-Service quality, OP2- Level of productivity, OP3- Profitability, OP4- Rate of innovation, OP5- Stock market performance and OP6- Environmental matters. Research constructs for measuring organizational performance from CRANET survey are presented in Table 1, and are measured as gaining the answer to the following question: Compared to other organisations in your sector, how would you rate the performance of your organisation in relation to the following?. Research construct for measuring usage of HRIS from CRANET survey is presented in Table 2.

Table 1 Elements of the construct related to the organizational performance

CONSTRUCT CODE	Construct	Construct values				
		Poor or at the low end of the industry	Below average	Average or equal to the competition	Better than average	Superior
OP1	Service quality	1	2	3	4	5
OP2	Level of productivity	1	2	3	4	5
OP3	Profitability	1	2	3	4	5
OP4	Rate of innovation	1	2	3	4	5
OP5	Stock market performance	1	2	3	4	5
OP6	Environmental matters	1	2	3	4	5

Source: Author's work based on CRANET survey

Table 2 Variable measuring the usage of HRIS in the organization

CONSTRUCT CODE	Construct	Construct values	
		Usage	No usage
HRIS_Usage	Usage of HRIS in the organization	1	0

Source: Author's work based on CRANET survey

4. Results

Table 3 presents descriptive statistics of organizational performance according to the usage of HRIS. For organizations that do not have HRIS and those that use HRIS, mean value is higher than 3 for all organizational performance variables, with exception of one variable – Stock market performance (Do not have HRIS: 2.82; Use HRIS: 2.98). However, mean values for all organizational performance variables are higher in the group of organizations that use HRIS. The highest mean value is for organizational performance variable named Service quality (Do not have HRIS: 3.86; Use HRIS: 3.90).

Table 3 Descriptive statistics of organizational performance according to HRIS usage

	Service quality	Productivity	Profitability	Innovation	Stock market performance	Environmental matters	Average Organizational performance
Do not have HRIS							
Mean	3.86	3.60	3.35	3.37	2.82	3.33	3.36
N	844	814	807	814	477	739	443
St. Dev.	0.77	0.88	0.98	1.05	4.10	1.00	0.69
Use HRIS							
Mean	3.90	3.63	3.44	3.47	2.98	3.47	3.46
N	3892	3824	3626	3783	2198	3507	2034
St. Dev.	0.75	0.82	0.95	0.95	1.12	0.90	0.64
Total							
Mean	3.91	3.63	3.43	3.45	2.95	3.44	3.44
N	4736	4638	4433	4597	2675	4246	2477
St. Dev.	0.75	0.83	0.95	0.97	2.01	0.92	0.5

Source: Author's work based on CRANET survey

Figure 2 Ratio of organizations according to the usage of HRIS
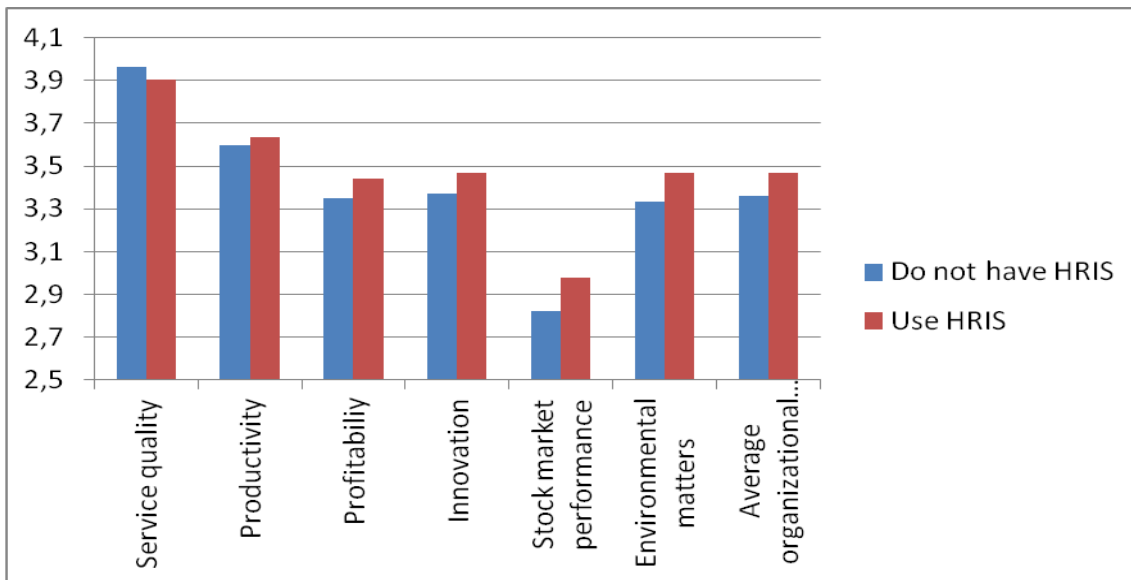
Source: Author's work based on CRANET survey

Figure 2 presents ratio of organizations according to the usage of HRIS. For organizational performance variables, the mean values are very similar, no matter organizations do not have HRIS or use HRIS. However, organizations that use HRIS have slightly higher mean values for all variables.

Table 4 presents Mann-Whitney test of the relationship between the usage of HRIS and organizational performance. Results of the Mann-Whitney test indicate that discovered differences of the relationship between the usage of HRIS and organizational performance are statistically significant at 1% of probability (Stock market performance, Environmental matters and Average organizational performance), at 5% of probability (Profitability and Innovation) and at 10% of probability (Service quality). Results also showed that that discovered differences of the relationship between the usage of HRIS and organizational performance are not statistically significant for variable Productivity (p-value: 0.422).

Table 4 Mann-Whitney test of the relationship between the usage of HRIS and organizational performance

	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
Service quality	1577864	9153642	-1.951	0.051*
Productivity	1530419	1862124	-0.802	0.422
Profitability	1384330	1710358	-2.525	0.012**
Innovation	1467169	1798874	-2.219	0.026 **
Stock market performance	447895	561899	-5.226	0.000***
Environmental matters	1214061	1487491	-2.884	0.004***
Average organizational performance	405965	504311	-3.278	0.00***

Source: Author's work based on CRANET survey
Note: *** statistically significant at 1%; ** 5%, * 10%

Table 5 presents summary results of the Mann-Whitney test of the relationship between the organizational performance and HRIS usage. Results indicate that relationship between the organizational performance and HRIS usage is higher and is statistically significant at 10% of probability for variable Service quality, at 5% of probability for variables Profitability and Innovation and at 1% of probability for variables Stock market performance, Environmental matters and Average organizational performance.

Table 5 Summary results of the Mann-Whitney test of the relationship between the organizational performance and HRIS usage

Organizational performance	Type of relationship and statistical significance
Service quality	Higher for HRIS USAGE / 10%
Productivity	Not statistically significant
Profitability	Higher for HRIS USAGE / 5%
Innovation	Higher for HRIS USAGE / 5%
Stock market performance	Higher for HRIS USAGE / 1%
Environmental matters	Higher for HRIS USAGE / 1%
Average organizational performance	Higher for HRIS USAGE / 1%

Source: Author's work based on CRANET survey

6. Conclusion

The goal of the paper was to test the relationship between the implementation of HRIS to various measures of organizational performance. The Mann-Whitney test is are used, and results show a positive impact of HRIS to organizational performance is stronger if HRIS supports self-service to managers and employees. The Mann-Whitney test indicate that the relationship between organizational performance and supports self-service to managers is higher if HRIS is used, but for variable Service quality is not statistically significant. Results of regression analysis have shown that the relationship between organizational performance and supports self-service to employees using HRIS has positive impact only for variable Innovation and for managers for only three organizational performance variables: Stock market performance, Environmental matters and Average organizational performance. Therefore, the hypothesis can be partially accepted.

This work contributes to the area of the researching impact of ICTs to organizational performance focusing to the usage of HRIS. The purpose of this research was to increase the understanding into impact of HRIS usage to organizational performance with the utilization of global CRANET data set, leading to global analysis. The research was based on the propositions that the data collected by CRANET is representative of the HRM practices of worldwide companies. Based on the size of the sample, and restrictive practices of CRANET in data collection, there are strong arguments that this proposition is valid.

On the other hand, the main limitations of research stem from the cross-sectional characteristics of the data that represents a snap-shot of the specific characteristics, and do not provide insight into long term relationship and changes. However, cross-sectional research is widely used due its costs that are lower than longitudinal studies, and this is the reason why this approach is also used for this research.

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SHARING IS CARING, AND MILLENNIALS DO CARE: COLLABORATIVE CONSUMPTION THROUGH THE EYES OF INTERNET GENERATION

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Abstract

The purpose of this research is to investigate the effects of perceived value dimensions (i.e., economic value, hedonic value, symbolic value, and social value) on behavioral intent to engage in collaborative consumption from the perspective of Generation Y. Furthermore, this research aims to investigate the mediating effect of young consumers' attitude toward collaborative consumption on the relationship between perceived value dimensions and behavioral intent to engage in collaborative consumption. Responses were obtained from a total of 219 respondents drawn from student groups studying at one of the largest university in Bosnia and Herzegovina, using convenience sampling. The data collected were analyzed using confirmatory factor analysis (CFA) and multiple regression analysis. Research findings suggest that specific dimensions of value perceptions (economic, hedonic, symbolic, and social) have differing direct effects on young consumers' behavioral intention to engage in collaborative consumption services. Regarding mediating role of consumers' attitude toward collaborative consumption, it was found that mediating effect takes place only in the symbolic value-behavioral response link. Given the paucity of research focusing specifically on the collaborative consumption from the perspective of Generation Y, this study provides new and useful insights for researchers and managers.

Keywords: Sharing economy, Collaborative consumption (CC), Perceived value, Generation Y (Millennials)

JEL Classification: M00

1. Introduction

Over the past years, sharing economy has become a fast-growing and widespread phenomenon (Belk, 2014a; Böcker and Meelen, 2017). The idea of sharing is old as humanity (Belk, 2014a), and we share for both functional and altruistic reasons (Fine, 1980). According to Benkler (2004), sharing is defined as nonreciprocal pro-social behavior. However, thanks to the information and communication technologies, sharing economy along with collaborative consumption, is deeply rooted in the Internet age (Belk, 2014a; Hamari *et al.*, 2015). Internet supports online based networks, and mobile applications, even more, contribute to free and instant information flow (Bardhi and Eckhardt, 2012; Hamari *et al.*, 2015; Möhlmann, 2015).

Many believe that the global financial crisis (2008) contributed to the development of sharing economy (Walsh 2011; Bardhi and Eckhardt, 2012; Schor and Fitzmaurice, 2015) since one of the positive effects of sharing economy is related to cost saving. Still, economic benefits are not the only drivers that move consumers toward collaborative consumption. Owyang *et al.* (2014) suggest that besides economic reasons, collaborative consumption is as well driven by societal and technological factors. Moreover, the literature suggests that nowadays consumers are prone to try new ways of accessing what they need, they are open to experimenting with new brands, and they are environmentally oriented. There is a broad spectrum of reasons for consumers to share and collaborate, thus flourishing of collaborative consumption could be evident in the future as well. Furthermore, the demographic characteristics of consumers are related to the market of sharing economy and perceived values that lie behind collaborative consumption (Tussyadiah, 2015). Due to their inclination toward technological inventions and everyday usage of Internet and mobile application, Generation Y is becoming influential generational cohort that shapes social and economic trends around the world. Since Millennials are grown up in the era of social media and cyberspace (Deal et al., 2010), sharing economy and collaborative consumption for this generation seem like a natural fit (Godelnik, 2017). Perceived Values embraced by Millennials are related to impact their consumption choices have on the social, communal and environmental causes, keeping them constantly open for the collaborative type of consumption (Hwang and Griffiths, 2017).

According to Möhlmann (2015), there is a lack of knowledge about the reasons why consumers engage and why consumers avoid to participate in collaborative activities. While Böcker and Meelen (2017) argue how until now there is a lack of quantitative research about the sharing economy motivators, Jenkins *et al.* (2014) even emphasize that studies about drivers of the usage of collaborative consumption are rare and contain shortcomings. Moreover, Hamari *et al.* (2015) claim that in so far conducted research, there is an evident lack of quantitative studies on motivators that influence consumers' attitudes and intentions toward collaborative consumption. Benoit, S. *et al.* (2017) suggests that more profound understanding of factors influencing participation of consumers in CC can be enhanced with examinations of potential moderators and mediators within observed relations.

Taking all previously mentioned into account and bearing in mind characteristics of Generation Y, this study aims to explore perceived values that influence consumers' behavioral intention to engage in collaborative consumption. Moreover, the study assesses how the attitude toward collaborative consumption mediate the relation between perceived

values and behavioral intention to engage in CC. The article is structured in coming manner. The next section brings the theoretical framework and development of hypotheses. The third section contains the research methodology, and the fourth contains the results of the conducted research. The subsequent sections develop discussion and conclusion.

2. Theoretical background and research hypotheses

Even the sharing phenomenon is still in its formative stages (Bucher *et al.,* 2016), many terms in literature intended to depict this emerging "sharing" trend where products are more shared than privately owned (Nesta, 2014).

Botsman (2015) conceptualize the sharing economy as an economic system based on sharing underused assets or services, for free or for a fee, directly from individuals. Other authors observe sharing economy as "an emerging economic-technological phenomenon that is fuelled by developments in information and communication technology, growing consumer awareness, the proliferation of collaborative web communities as well as social commerce/sharing (Botsman and Rogers, 2010; Kaplan and Haenlein, 2010; Wang and Zhang, 2012). It is considered as an umbrella concept that encompasses several information and communication technology developments and technologies, among others collaborative consumption, which endorses sharing the consumption of good and services through online platforms" (Hamari *et al.,* 2015: 2047).

The concept of sharing economy in literature is often associated with collaborative consumption. For the purpose of this study, we will follow a collaborative consumption conceptualization offered by Belk (2014a) where he argues that "collaborative consumption is people coordinating acquisition and distribution of a resource for a fee or other compensation" where term *other compensation* refers to bartering, trading, and swapping, which involve giving and receiving non-monetary compensation. Also, this definition omits those types of giving that concern a permanent ownership transfer (Belk, 2014b). Some scholars observe collaborative consumption broader than just consumption and claims that it is an activity where contribution and usage of resources are intertwined via peer-to-peer networks (Hamari *et al.,* 2015). However, this is just confirmation that collaborative consumption can be viewed through various standpoints: sharing (e.g., Belk, 2014a), borrowing (e.g., Jenkins *et al.,* 2014), reuse (e.g., Lessig, 2008), and similar.

In both sharing economy and collaborative consumption, Millennials have been recognized as an outstanding consumer group (Head, 2013). This is expected since Millennials represents a generational cohort that apt for multitasking due to the high use of technology and to work for greater good (White, 2011). Moreover, Millennials relation with technology probably can be very well illustrated if we notice that in literature they are as well recognized under the names of "Internet generation" or "Connect 24/7" (Schroer, 2015). This research observes Millennials as a generation born in 1981 – 1999 period (Wong *et al*., 2008). According to Theory of Generation (or so-called Sociology of Generation), a generation is a group of individuals of similar ages whose members have experienced a noteworthy historical event within a set period (Pilcher, 1993). Therefore, in order to be part of the same generation, for individuals, it is not enough to belong to same time span but to experience a similar socio-historical environment that shapes social conscious of people during young ages, since later

experiences are shaped by early influences (Pilcher, 1993). What is interesting to mention for Millennials, in general, is an evident shift from ownership to access (Godelnik, 2017).

To the best of our knowledge, few studies investigated Millennials'response to collaborative consumption (e.g., Godelnik, 2017; Hwang and Griffiths, 2017) even literature suggests fit between their perceived values and traits on one side and characteristics of collaborative consumption on the other side. Drawn upon Social-Exchange Theory (Homans, G. C., 1958; Emerson, R., 1976; Blau, P., 1964) and Theory of Reason Action (Ajzen and Fishbein, 1980) this study examines Millennials' perceived values and attitudes toward collaborative consumption. Social-Exchange Theory (SET) provides a ground for consumers motivation to participate in collaborative consumption since individuals' behavior is a result of self-interest and sense for interdependence (Emerson, 1976). Homans' ideas about social exchange mostly focus on the dyadic relationship in the individual behavior of actors in mutual interaction while Blau moves more towards economic and utilitarian aspects of social exchanges (Cook and Rice, 2006). However, the main idea of SET where two or more participants value something to each other and need to decide whether to exchange it and in which amount, is a solid framework for sharing economy and collaborative consumption.

Theory of Reason Action (TRA) examines the relationship between attitudes and behaviors relying upon behavioral intentions. According to TRA, two factors determine individuals' intention to act: attitude towards behavior and subjective norms. Attitude is the degree to which an individual has a favorable or unfavorable evaluation of behavior in question. It is generated through positive or negative behavioral beliefs related to associations on possible outcomes from such behavior. In TRA subjective norms refers to the perception of social influence on individuals to act in a specific behavior. Postulates of TRA are applicable for the purpose of this study since TRA examines relations between attitudes and behavioral intention and behavior. TRA can additionally explain rational human behavior in the context of sharing economy and collaborative consumption. Moreover, lately TRA has been applied in online contexts such as online stock trading, software piracy, purchasing green brands and similar (Barnes and Mattsson, 2017).

Value perception refers to both objective (based on a cost-benefit analysis) and subjective (more personal, multi-sensory and emotional) collaborative consumption experiences (Hwang and Griffiths, 2017). Since Millennials support sustainable consumption, the literature suggests three types of perceived values: economic/utilitarian, hedonic, and symbolic. Together with social values, three values above are observed as predictors of consumers' behavioral intention to engage in CC in this research. The economic value (e.g., cost savings) represents one of the most common determinants for the younger generation to engage in collaborative consumption (Möhlmann, 2015). It is the task-related, functional or objective benefit of consumption experiences. Perceived hedonic values refer to emotional aspects of collaborative consumption, meaning that consumers prefer fun, enjoyment, fantasy, entertainment (Babin *et al.*, 1994; Babin and Attaway, 2000). Symbolic values are related to altruistic and social values. Also, they are based on awareness of sustainability issues related to consumption (Hwang and Griffiths, 2017; Greendex, 2014). When consumers experience emotional rewards for their positive social behavior, we speak about social values (Aknin et al., 2013). Social drivers are related to communication, social networks, community (Wu *et al*.

2017), users sharing and relationship-building with others (Kim *et al.,* 2013). Moreover, they satisfy needs virtually and not physically (Wu *et al*. 2017).

As discussed earlier, our research model brings together perceived economic, hedonic, symbolic and social values, and behavioral intention toward CC from the perspective of Generation Y. We test attitude toward CC as a mediator in the relationship between values and behavioral intention. Drawing upon theoretical underpinnings of the conceptual model Figure 1 illustrates proposed research model and hypotheses.

Figure 1. Conceptual framework and research hypotheses
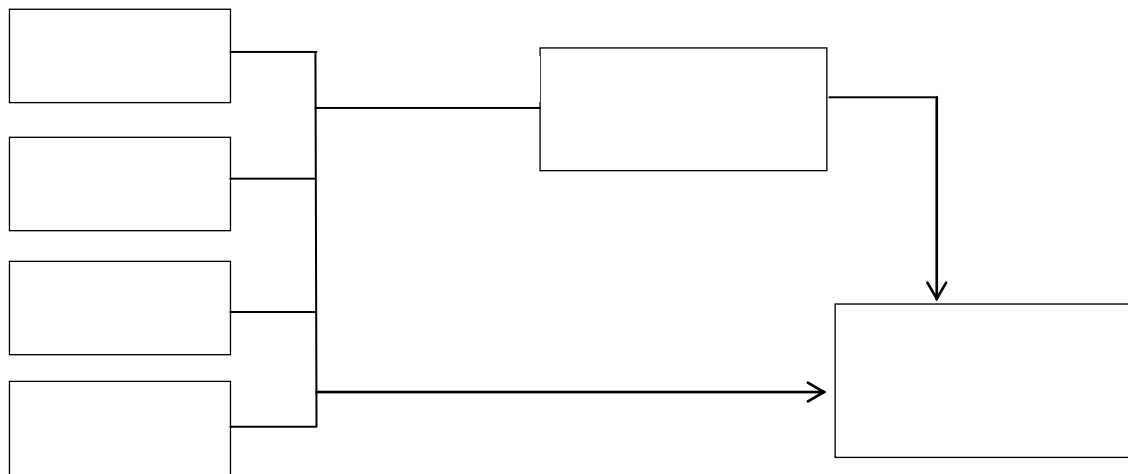
H1: Economic value is positively related to consumers' behavioral intention to engage in collaborative consumption.
H2: Hedonic value is positively related to consumers' behavioral intention to engage in collaborative consumption.
H3: Symbolic value is positively related to consumers' behavioral intention to engage in collaborative consumption.
H4: Social value is positively related to consumers0 behavioral intention to engage in collaborative consumption.
H5a: The impact of economic value on consumers' behavioral intention to engage in collaborative consumption is mediated by consumers' attitude toward collaborative consumption.
H5b: The impact of hedonic value on consumers' behavioral intention to engage in collaborative consumption is mediated by consumers' attitude toward collaborative consumption.
H5c: The impact of symbolic value on consumers' behavioral intention to engage in collaborative consumption is mediated by consumers' attitude toward collaborative consumption.
H5d: The impact of social value on consumers' behavioral intention to engage in collaborative consumption is mediated by consumers' attitude toward collaborative consumption.

3. Research methodology

3.1. Data collection and sample

As the purpose of this study was to investigate the effects of perceived value dimensions (i.e., economic value, hedonic value, symbolic value, and social value) on behavioral intent to engage in collaborative consumption from the perspective of Generation Y, students from Sarajevo School of Economics and Business (SEBS) were chosen as the target population. We acknowledge that this sample is not representative of the general Generation Y members, but it is likely to be a reasonable reflection of collaborative consumption patterns amongst this generation cohort in Bosnia and Herzegovina.

The primary data for this study were collected during May 2018 using an online survey questionnaire. The sample consisted of full-time undergraduate students enrolled in seven courses. Selection of courses was consciously made with the intent to find both upper and lower division courses that would give us a diverse student sample. An e-mail message including the statement of research purpose, the invitation to participate in the survey and the hyperlink for directing participants to the questionnaire were posted on a class website. Due to budget constraints and the risk of introducing some form of bias into the results, no incentives were used to solicit survey participation. The potential common method variance (CMV) problems were mitigated by informing respondents that there are no right/wrong answers and that they should approach each question honestly and candidly (Podsakoff, MacKenzie & Podsakoff, 2012).

Among the 227 questionnaires returned, eight were discarded because the respondents failed to complete all of the required questions. Therefore, 219 questionnaires remained for use in the data analysis. The sample consisted of a slightly higher proportion of females (68.9%) than males (31.1%). The average age of respondent was 22.2 years with a standard deviation of 5.083. With the regard of the experience in collaborative consumption, 86.8% of respondents said they participated in some form of collaborative consumption in the past. Therefore, the sample consists of Generation Y adults who are *au fait* with collaborative consumption.

3.2. Measurement instrument

The research instrument was made up of established scales that were already validated in previous research. Section A measured the four facets of perceived value in the context of collaborative consumption. The economic value of CC was assessed using three items from Hamari Sjöklint and Ukkonen (2015). The hedonic value and social value were measured by items proposed by Wu, Zeng, and Xie (2017). The symbolic value was measured with three items adapted from Hwang and Griffiths (2017). Section B measured consumers' attitude toward CC using four items adapted from Ajzen (1991) and consumers' behavioral intention to engage in CC with three items from Bhattacherjee (2001). All involved constructs were measured using a seven-point Likert scale. The last part of the questionnaire (Section C), is designed to collect information about the respondent's gender, age, university standing, household size, monthly household income.

4. Research findings

Multiple regression analysis is used to test the research hypotheses depicted in the proposed model (Figure 1). Before multiple regression analysis is conducted, we performed confirmatory factor analysis (CFA) to examine the measurement model fit and construct validity. The analysis was performed using the software SPSS Amos 20.

Measurement model assessment. Confirmatory factor analysis (CFA) was performed using the maximum likelihood method of estimation (MLE). The goodness-of-fit indices for the CFA were within an acceptable range. Measures of absolute fit (χ^2 =387. 519, df = 174, $p < 0.001$, $\chi^2/df = 2.227$), the root mean square of error of approximation (RMSEA) = 0.075; the standardized root mean square residual (SRMR) = 0.062 indicated a good fit. Also, relative fit indices for this model were above the recommended threshold for good fit (Comparative Fit Index CFI = 0.936; Tucker-Lewis Index -TLI = 0.922).

Table 1. Results of confirmatory factor analysis (CFA)

Construct and items	St. loadings	t-value	CR	AVE
Economic value (ECOVAL)			0.861	0.676
I can save money if I participate in CC.	0.828	Fixed		
My participation in CC benefits me financially	0.899	14.271***		
My participation in CC can improve my economic situation.	0.731	11.697***		
Hedonic value (HEDVAL)			0.865	0.619
CC gives me excitement.	0.656	Fixed		
CC helps me relive stress	0.879	10.697***		
CC helps me to get my mind off what stresses me out.	0.867	10.610***		
CC makes me happy	0.723	9.249***		
Symbolic value (SYMVAL)			0.871	0.694
CC gives me "smart shopper" feelings.	0.866	Fixed		
CC gives me „responsible shopper" feelings	0.909	17.069***		
CC gives me the feeling that I am part of a wider cultural movement	0.711	12.054***		
Social value (SOCVAL)			0.890	0.671
CC gives me the opportunity to create meaningful interaction with others.	0.740	Fixed		
CC gives me the opportunity to connect with other people of similar interest	0.873	12.753 ***		
CC gives me the opportunity to meet with new people	0.834	12.207***		
CC gives me the opportunity to expand my social contacts	0.824	12.066***		
Attitude toward CC (ATT)			0.892	0.675
All things considered, I find participating in collaborative consumption to be a wise move	0.829	Fixed		
All things considered, I think collaborative consumption is a positive thing.	0.886	15.730***		
All things considered, I think participating in collaborative consumption is a good thing.	0.763	12.753***		
Overall, sharing goods and services within a collaborative consumption community makes sense.	0.803	13.702***		
Behavioral intention (BI)			0.942	0.844
I can see myself engaging in collaborative consumption more frequently in the future.	0.937	Fixed		
I can see myself increasing my collaborative consumption activities if possible.	0.927	24.455 ***		
It is likely that I will frequently participate in collaborative consumption communities in the future.	0.898	22.385***		

Note: Fit indices: χ^2 387.519; df = 174; $p < 0.001$; $\chi^2/df = 2.227$; RMSEA = 0.075; SRMR = 0.062; CFI = 0.936; TLI = 0.922; CR = composite reliability; AVE = average variance extracted.

Subsequently, all constructs were submitted to reliability, convergent validity and discriminant validity evaluation. All constructs were deemed to be highly consistent and reliable as their composite reliability (CR) scores were above the recommended cut-off value of 0.7 (Bagozzi & Yi, 2012). Next, convergent validity and discriminant validity were tested. First, convergent validity was assessed by examining factor loadings of each observed variable. All factor loadings were significant and exceeded the recommended 0.50 threshold (Hair, Black, Babin, Anderson and Tatham, 2010). Convergent validity was further assessed by examining average variances extracted (AVE) values. As shown in Table 2 the AVE of all constructs exceeded the threshold value of 0.5. For the test of discriminant validity, the AVE values of any two constructs have to be higher than its squared correlation (Fornell & Larcker, 1981). It can be seen from Table 2 that no matter which pairs of constructs are considered, both AVE values are higher than its squared correlation. In conclusion, all the latent variables passed the discriminant validity test. Therefore, the measurement of all constructs is valid and reliable.

Table 2. Correlation matrix for discriminant validity

Code	Construct	ECOVAL	HEDVAL	SYMVAL	SOCVAL	ATT	BI
ECOVAL	Economic value	0.822[a]					
HEDVAL	Hedonic value	0.084	0.787				
SYMVAL	Symbolic value	0.479	0.548	0.833			
SOCVAL	Social value	0.333	0.478	0.610	0.819		
ATT	Attitude toward CC	0.640	0.245	0.652	0.539	0.821	
BI	Behavioural intention toward CC	0.380	0.400	0.577	0.300	0.563	0.919

Correlation analysis is performed to assess the association between constructs. The multi items for a construct were computed to produce an average score which was used in correlation analysis and multiple regression analysis. Table 3. shows that in regards to association with consumers' behavioral intention, attitude (r = 0.534, p < 0.01) turned out to have the strongest correlation, followed by symbolic value (r = 0.512, p < 0.01). As for correlations with attitude toward CC, strongest correlations appear for economic value (r = 0.585, p < 0.01), trailed by symbolic value (r = 0.580, p < 0.01) and behavioural intention (r = 0.534, p < 0.01). Next, the skewness of all the items ranges from -0.883 to -0.164, beneath ±5.0, where all constructs have negative skewness values, implying that the variables have a left-skewed distribution. Besides that, the values for kurtosis range from -0.131 to 0.915 far beyond the threshold value of ±10.

Table 3. Correlation Coefficient Matrix

Constructs	ECOVAL	HEDVAL	SYMVAL	SOCVAL	ATT	BI
ECOVAL	1					
HEDVAL	0.101	1				
SYMVAL	0.408**	0.533**	1			
SOCVAL	0.307**	0.443**	0.598**	1		
ATT	0.585**	0.248**	0.580**	0.496**	1	
BI	0.343**	0.392**	0.512**	0.294**	0.534**	1
** Correlation is significant at the 0.01 level (2-tailed).						

Multiple regression analysis is employed to investigate the effects of the independent variables (ECOVAL, HEDVAL, SYMVAL, and SOCVAL) on a single dependent variable (behavioral intention to engage in CC). The coefficient of determination (R^2) for this model is 0.315 (adjusted R^2 is 0.302) suggesting that the independent variables have together explained 31.5% of the variance in the dependent variable. Table 4. details that the F value in the ANOVA test is 24.610 and is significant at the level of 0.000, which indicates that the model is suitable for the collected data. Furthermore, values of variance inflation factors (VIF) for the variables in the study are all below the cut-off value of 10, indicating that there is no multicollinearity issue among independent variables. This is further supported by the tolerance values of more than 0.10 for each variable. Therefore, this fitted model is an adequate one for the collected data.

Table 4. Results of regression analysis

	Unstandardized coefficients		β	t	Sig.	Colinearity Statistics	
	B	St. Error				Tolerance	VIF
Constant	1.086	0.451		2.408	0.017		
ECOVAL	0.245	0.079	0.196**	3.108	0.002	0.803	1.245
HEDVAL	0.221	0.072	0.212**	3.073	0.002	0.671	1.490
SYMVAL	0.409	0.090	0.366***	4.538	0.000	0.491	2.036
SOCVAL	-0.094	0.086	-0.079[n.s.]	-1.092	0.276	0.613	1.631
R	0.561						
R^2	0.315						
Adjusted R^2	0.302						
F	24.610						
Sig.	0.000						

Note: Dependent Variable: Behavioral intention, ***$p<0.001$; **$p<0.01$; *$p < 0.05$; n.s. = non-significant

H1 postulates the relationship between the economic value (ECOVAL) and consumers' behavioral intention to engage in CC. An examination of the t-values shows that economic value (ECOVAL) significantly impacts consumers' behavioral intention to engage in CC ($\beta1 = 0.196$, t-value = 3.108, and $p<0.01$), therefore confirming H1. The regression results found another factor that has a significant direct effect on consumers' behavioral intention to engage in CC and in the anticipated direction, which is a hedonic value ($\beta2 = 0.212$, t-value = 3.073, and $p<0.01$). Thus, H2 is supported. H3 proposes the relationship between the symbolic value (SYMVAL) and consumers' behavioral intention to engage in CC (BI) (i.e., symbolic value positively affects consumers' behavioral intention to engage in CC). Regression results in Table 4 reveal that symbolic value (SYMVAL) has shown significant impact on consumers' behavioral intention to engage in CC ($\beta3 = 0.366$, t-value = 4.538, and $p<0.001$). Scores on the regression indicate that symbolic value has the biggest standardized beta coefficient, implying that symbolic value of collaborative consumption is the most important factor claimed by the respondents to influence their intention to engage in CC. Therefore, H3 is supported. As hypothesized in H4, further investigation was carried out on the effect of social value (SOCVAL) upon the consumers' behavioral intention to engage in collaborative consumption (BI). The regression analysis, however, has established that social value (SOCVAL) has a negative but non-significant effect on consumers' behavioral intention to engage in CC ($\beta4 = -0.079$, t-value = -1.092 and $p>0.05$). Therefore, H4 cannot be reinforced.

The mediating effect of the consumers' attitude toward collaborative consumption (ATT) on the relationship between perceived value factors (economic value, hedonic value, and symbolic value) and customer behavioral response was addressed by H5. Mediation refers to the covariance relationships between independent and dependent variables. It is an intervening variable through which the effect of an independent variable on the dependent variable can be explained. The mediating role of consumer's attitude toward collaborative consumption (ATT) was tested via the hierarchical regression analysis following the four-step method proposed by Baron and Kenney (1986). The first step is that the independent variable must affect the dependent variable. Table 5. presents that the relationship between independent variables (i.e., ECOVAL, HEDVAL, SYMVAL) and the dependent variable (i.e., BI) are significant ($p < 0.01$). Hence, the first condition for testing mediation is achieved. Next, the second step is that the independent variables must affect the mediating variable (i.e., consumers' attitude toward collaborative consumption - ATT). Economic value (ECOVAL) and symbolic value (SYMVAL) showed significant impact on consumers' attitude toward CC as $p < 0.01$. However, it was found that the effect of hedonic value (HEDVAL) on consumers' attitude toward collaborative consumption is negative and non-significant. Thus, the second condition for mediating effect is satisfied only for two independent variables – economic value (ECOVAL) and symbolic value (SYMVAL). The third step requires regression of the dependent variable on both the independent variables and on the mediator. Results for Step 3 show the mediator satisfactory has affected the dependent variable. Thus, the third condition is supported.

Table 5. Mediation analysis

Constructs	Step 1	Step 2	Step 3
Independent variables			
Economic value (ECOVAL)	0.188**	0.416***	0.014[n.s.]
Hedonic value (HEDVAL)	0.197**	-0. 017[n.s.]	-
Symbolic value (SYMVAL)	0.330***	0.420***	0.304***
Mediating variable			
Consumers' attitude toward collaborative consumption			0.349***
Adjusted R^2	0.302	0.364	0.338

In the unmediated model, the path relating economic value (ECOVAL) and consumers' behavioral intention to engage in CC was significant ($\beta 1 = 0.196$, t-value = 3.108, and $p<0.01$). When the mediating role of consumers' attitude toward collaborative consumption (ATT) was added to the model, the path linking economic value (ECOVAL) to consumers' behavioral intention to engage in CC ($\beta 1' = 0.041$) was statistically insignificant ($p> 0.50$). Therefore, no mediation was reported for consumers' attitude toward CC in the relationship between economic value and consumers' behavioral response. In the unmediated model, the path linking symbolic value (SYMVAL) and consumers' behavioral intention to engage in collaborative consumption was significant ($\beta 3 = 0.366$, t-value = 4.538, and $p<0.001$). When the mediating role of consumers' attitude toward collaborative consumption (ATT) was included in the model, the path symbolic value – behavioral response ($\beta 3' = 0.304$) was significant at $p < 0.001$. Interestingly, the beta coefficient value of the path symbolic value-behavioral response dropped but remained significant. Thus, a partial mediation of consumers' attitude toward collaborative consumption was reported in the relationship between symbolic

value (SYMVAL) and customer behavioral response (BI). Based on the previous discussion, only hypothesis H5c was supported. Hypotheses H5a, H5b, H5d are rejected.

5. Discussion

This study' results provide interesting insights into collaborative consumption from the perspective of Generation Y. The research was set with the aim to analyze the impact of Millennials' perceived values on their behavioral intention to participate in CC. Literature suggests that Millennials are probably one of the most representative generational cohorts regarding their interest in activities related to sharing economy and collaborative consumption. Even this research observe one generational cohort (Millennials), study' results confirm the involvement of the young respondents in collaborative consumption.

The rapid development of technologies and Internet age are good soil for the development of collaborative consumption. Since Millennials are described as Internet Generation and Connect 24/7 Generation, naturally, their engagement in collaborative consumption is more than expected. A sample of this study includes full-time students from SEBS (B&H) whom voluntarily participated in the research. CFA approved validity and reliability of chosen measurement instruments for all constructs. The results obtained by multiple regression analysis indicate that the attitude is the strongest predictor of behavioral intent to engage in collaborative consumption. This result is in line with other research (e.g., Hu and Janda, 2012), but more than that, they also confirmed the application of TRA in collaborative consumption context since TRA claims that attitude determines behavioral intentions and final behavior of the customer. Besides the attitude-behavioral intention link, relations between perceived values (i.e., economic, hedonic, symbolic, social) and behavioral intentions toward collaborative consumption were observed. Here, the strongest relationship is noted between perceived social value and behavioral intention toward collaborative consumption. Furthermore, perceived economic, hedonic and symbolic values exhibit weak relationships with behavioral intentions. Regarding the relationship between attitude and perceived values, out of four observed perceived values, economic and symbolic values have the most substantial influence on the attitude.

Perceived symbolic, hedonic and economic values are identified as predictors of Millennials' behavioral intentions to engage in CC. Study' results identified symbolic values as strongest predictor among respondents of this study, which is interesting since some of the previous studies suggests that economic value is probably one of the strongest predictors of consumers' behavior (e.g., Barnes & Mattson, 2016). However, Millennials respondents from this study, placed economic values on third place, right after hedonic values. Background for this can be related to Millennials' idea about ownership – they prefer to have access to the goods/ services they need than to owe good/ services. However, as Godelnik (2017) claims, this reasoning cannot be accepted without further research and deeper insight since up to now academic literature does not have enough supporting findings. Surprisingly, it is interesting to note how social values are not recognised as a driver for Millennials' behavioral intention toward CC. Findings of this study imply that perceived symbolic and hedonic values are strongest determinants of behavioral intention to engage in collaborative consumption among Millennials. Perceived hedonic and symbolic values are according to findings of this study prevalent over economic values. Perceived hedonic values are related to feelings of

excitement, happiness, adventures, and stress release while being the wise and responsible consumer who is part of some bigger movement lies in the foundations of perceived symbolic values. According to Baruch *et al*. (2016), monetary compensation in sharing economy are necessary conditions since it helps to maintain the basis of trust between sharing participants, but monetary compensation alone probably is not sufficient to promote participating in collaborative consumption.

Unexpectedly, the mediating effects stated in H5a, H5b, and H5d were not found. Partial mediation is approved only in H5c which examined the mediation effect of attitude toward CC in perceived symbolic value – behavioral intention to engage in CC relationship. The absence of mediating effects creates suggestions for further research. It might be interesting to observe if the similar result (regarding mediations) would be obtained in research with other generations.

This research brings together perceived values, consumers' attitude toward CC and consumers' behavioral intention to engage in CC from the standpoint of Millennials thus contributing to literature by filling existing gap in CC research. Since in this study, we identified perceived values that are driving behavioral intention as well as the one that is not recognized (in the context and with the sample we observed) as a driver of behavioral intention, results of this study might help managers and other decision makers. Managers might better understand the behavioral intentions of young consumers and approach them accordingly. Obviously, perceived economic values are not enough to move young consumers closer to collaborative consumption, but perceived symbolic and hedonic values play an important role in determining Millennials' behavioral intentions.

6. Conclusion

Even in the early stages, collaborative consumption grasps attention among consumers, practitioners, and scholars. Although beginnings of the sharing economy and CC are related to the economic crisis, research suggests how sharing economy and CC continue the rising trend. As it is presented through results of this study, objective collaborative consumption experiences (i.e., costs, savings) are not the only reasons behind consumers' participation in CC. Perceived symbolic and hedonic values along with perceived economic values are significant contributors to Millennials' behavioral intention to engage in collaborative consumption. Our results indicate that perceived social values are not predictors of Millennials' behavioral intention to engage in collaborative consumption. Even this study aims to bridge the theoretical and practical gap on Millennials and CC knowledge; we acknowledge that many questions are not answered yet. However, we hope that this paper might provide additional insight into the perceived values of Millennials. As it is claimed before, they are willing to share and participate in collaborative consumptions.

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PRODUCTIVITY CHANGE OF MICROFINANCE INSTITUTIONS IN BOSNIA AND HERZEGOVINA

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Abstract

The main aim of this paper is to investigate the productivity changes of microfinance institutions (MFIs) in Bosnia and Herzegovina (BiH) during and after the recent financial crisis. The study covers the period starting from 2008 until 2015. Using the Malmquist Productivity Index (MPI) over the sample of 10 MFIs and a balanced panel dataset of 80 observations, this study explores technical and technological change as well as total factor productivity (TFP) change. The empirical findings indicate a decline in TFP in most of the analyzed periods with an average decrease of 2.5%. The study reveals an average technological decline in the industry of 1.7%, while technical efficiency change is recorded at the level of -0.8%. Overall, crisis efficiency recovery occurred during the period between 2009 and 2013. However, due to technological inefficiencies, average total factor productivity change remains negative. Hence, policy makers need to enhance the technological progress in order to meet their strategic objectives in B&H MFIs.

Introduction

Since their inception during the 1980s until now, microfinance institutions (MFIs) in B&H passed through a number of changes. From being driven by their social mission of reaching poor people and alleviating poverty, MFIs shifted their focus on only achieving financial goals (Bassem 2014). However, even though the primary aim of MFIs is to enable access to funds for low-income populations, this goal cannot be achieved without sustainable profitability (Efendic & Hadziahmetovic, 2017). The environment in which MFIs operate are significantly influenced by rapid innovations in technology together with the implementation of different policy instruments (Wijesiri & Meoli, 2015). These rapid changes resulted in growing

competition among MFIs which further on resulted in pushing the production possibility frontier outward and an increase in both outreach and the sustainability of MFIs (Manos & Yaron, 2009). Therefore, it is essential for MFIs to operate in an efficient way and in this framework efficiency and productivity analysis has become quite appealing in its effort to improve outreach, competitiveness and financial sustainability (Bassem 2014).

While there has been a significant amount of research conducted in the analysis of MFIs efficiency, among others: Flückiger & Vassiliev (2007) who investigated two dimensional efficiency of MFIs in Peru; Gutiérrez-Nietoet al. (2007), Bassem (2008) and Hassan &Sanchez (2009) who analyzed efficiency levels of MFIs located in Latin America, the Mediterranean and developing countries respectively. Further on similar research was conducted by Gutiérrez-Nieto et al. (2009) where social and financial efficiency of Asian MFIs was analyzed, Sedzro & Keita (2009) whose study focuses on the efficiency of MFIs located in seven countries from the West African Economic and Monetary Union, Haq et al. (2010) who examined cost efficiencies of MFIs across Africa, Asia and Latin America. Kipesha (2012) conducted a study which focused on South African MFIs and their efficiency while Tahir (2013) assessed the efficiency of MFIs in ASEAN countries; Widiarto & Emrouznejad (2015) went a step ahead and compared two-dimensional efficiency between Islamic and conventional MFIs; Wijesiri & Meoli (2015) analyzed MFIs efficiency in Sri Lanka and Efendic & Hadziahmetovic (2017) who investigated the financial and social efficiency of MFIs in B&H. However, just a few studies have been performed to study the productivity change of MFIs. One of the possible reasons for this is the greater difficulty in finding time series data for MFIs (Wijesiri & Meoli, 2015).

This aim of this study is to explore the productivity change of MFIs in the post-crisis period, or from 2008 and 2009 (the crisis years) until 2015, as a last year of available data for our sample. Although MFIs showed have efficiency growth in the after crisis period in both the social and financial dimension (Efendic & Hadziahmetovic, 2017), this study shed light on productivity changes in the specific period of their development. The aim of this study is also to quantify the Malmquist productivity index (MPI) and its components for MFIs that are operating in B&H over the 7-year period from 2008 to 2015. The microfinance sector in B&H started to develop as a support to the country recovery from the consequences of war (Bateman et al., 2012) and hence B&H serves as a good case for this kind of research (Efendic & Hadziahmetovic, 2017). In addition to this, the study will help policymakers, as well as industry practitioners and donors to understand the performance and productivity change of MFIs and direct them to construct proper policies, managerial decisions and strategies to enhance the development of MFIs in this region. Accordingly, the study will contribute to the limited literature in the field of microfinance.

The paper is organized as follows. Section 2 of the paper provides a literature review on MFIs productivity changes and Malmquist index as a used methodology in the estimation of productivity changes. Section 3 covers the Malmquist index as a method of the estimation of productivity change and its application in the MFI sector as well as a data collection and statistics as a most significant limitation in efficiency analysis in the MFI sector (Widiarto & Emrouznejad, 2015). Section 4 provides the results and the discussion of the results with recommendations. The paper ends with conclusion remarks.

Literature on MFIs productivity changes

In the past two decades, there has been a significant increase in interest for microfinance. Links between the microfinance sector and both national and international economies are becoming stronger (Littlefield & Kneiding, 2009; Di Bella, 2011) and microfinance is becoming more similar to traditional finance (Wagner & Winker, 2012). Lately, the main areas of research interest are efficiency and productivity evaluations of MFIs. Productivity is considered as one of the main engines of a firm's growth and its importance for MFIs is stressed out in numerous studies (Gebremichael & Rani, 2012; Bassem, 2014; Azad et al., 2015; Mia & Chandran, 2015; Wijesiri & Meoli, 2015; Tahir & Tahrim, 2015; Mia & Bassem, 2016).

Efficiency or productivity can be measured using parametric or non-parametric techniques depending on the context of the researcher's study (Mia & Bassem, 2016) and it is considered as one of the main challenges of micro-economic analysis (Efendic, 2014). The assessment of productivity and its determinants is important given it can significantly improve the utilization of a firm's scarce resources (Isik & Hassan, 2003). However, empirical studies on productivity and movements of MFIs are still in their infancy (Wijesiri & Meoli, 2015). One of the first attempts to measure efficiency and productivity of global MFIs considering the effect of subsidies was research done by Nawaz (2010). The author conducted a three-stage analysis consisted of a calculation of technical and pure efficiency scores, a calculation of Malmquist indices to analyze productivity change and an analysis of Tobit regression. Tahir & Tahrim (2015) conducted a similar study and investigated the efficiency and the productivity of Cambodian microfinance institutions for the period 2008-2011. Results show that both an increase and decline in productivity were attributed to technological change. In addition, the results show that the dominant source of efficiency was scale related meaning that MFIs are operating at an adequate scale of operations but on the other hand they are inefficient when it comes to asset and operating cost management. Bassem (2014) examines productivity changes based on a sample of 33 MFIs operating in the Middle East and North African region during the period 2006-2011. The methodology used is Malmquist productivity index. Research shows that overall productivity declines over the analyzed time period. The author stresses that weakness of the DEA based Malmquist approach should be considered given that this methodology (due to sampling variation) does not consider the uncertainty that surrounds the MPI estimates and MPI components. Wijesiri & Meoli (2015) analyzed a sample of 20 Kenyan MFIs. The analysis is done over the period 2009-2012 and they applied DEA based the Malmquist bootstrap method proposed by Simar & Wilson (1999). In addition, they decompose MPI into changes in technical and technological efficiency to determine the sources of movements in productivity. Further on, the authors decompose technical efficiency on pure and scale efficiency. Empirical results revel that productivity of the majority of MFIs increases over time mainly due to different policy reforms and the application of innovative products that caused positive shift in the production frontier. A major contribution of this study is the use of the bootstrap MPI methodology in order to obtain confidence intervals that will show whether the results indicate real change or are an artifact or sampling noise.

More recently, Mia & Bassem (2016) investigated the productivity of 50 South Asian MFIs for the period 2007-2011. The authors employed the Malmquist productivity index. The results of the study showed that on average productivity grew annually by 2.1% mainly as a

result of the technical efficiency changes which describe the degree to which DMU improves or deteriorates in terms of the efficiency levels. On the other hand, technological change defined as a process by which an optimal combination of inputs and outputs is achieved through better technological and capital equipment used (Chandran & Pandiyan, 2008) remain stagnant. This implies that even though microfinance is an innovative approach to financing in itself, flexibility is not the characteristic of the MFI sector. MFIs lack the adoption of innovative financial products and experience in cost cutting delivery methods that can improve their level of productivity (Mia & Bassem, 2016).

Methodology and data

3.1. The Malmquist index

Efficiency is usually assessed using parametric or non-parametric methods. Data envelopment analysis (DEA) is a non-parametric method that shows an exponential growth in its application in academic research over the last 40 years (Emrouznejad &Yang, 2017). DEA is an approach used for the measurement of the relative efficiency of as set of decision making units (DMUs) using mathematical programming (Wang & Lan, 2011). DEA, in comparison to parametric methods, is based on a complex multi-input/output structure (Cooper et al., 2006). Since the first DEA model was developed – CCR model of Charnes et al. (1978) number of different DEA models have been developed (Wang & Lan, 2011) and consequently a large number of DEA applications were reported. Around 10,300 DEA-related research articles have been published in different journals (Emrouznejad & Yang, 2017).

Productivity measurement represents one of the important research topics of DEA (Wang & Lan, 2011). One of the commonly used approaches for productivity measurement is the DEA based Malmquist productivity index (MPI). Beside this one there are Fisher index and Tornqvist index (Bassem, 2014). However, in comparison to these two MPI has three main advantages (Grifell-Tatje & Lovell, 1996): there is no requirement for profit maximization nor for cost minimization assumptions, it does not require information that is related to the prices of inputs and outputs and what is useful for researchers' productivity changes could be further on decomposed into technical efficiency change and technical change. MPI was introduced by Caves et al., (1982) using input and output distance functions. It is further extended by Fare et al., (1992). To define the Malmquist index Fare et al., (1994) defined distance functions with respect to two different time periods; t (based period) and t+1:

$$D_0^t(X^{t+1}, Y^{t+1}) = \inf\{\theta : (X^{t+1}, Y^{t+1}/\theta) \in S^t\} \qquad (1)$$

$$D_0^{t+1}(X^t, Y^t) = \inf\{\theta : (X^t, Y^t/\theta) \in S^{t+1}\} \qquad (2)$$

In (1) the distance function measures the maximal proportional change in output required to make (X^{t+1}, Y^{t+1}) which is feasible in relation to the technology at time τ. Similarly, in (2) the distance function measures the maximal proportional change in output required to make (X^t, Y^t) which is feasible in relation to technology at time t+1.

Following Fare et al. (1994), MI_0 for each MFI between t and t+1 is defined as the geometric mean of two MPI:

$$MI_0^{t,t+1} = \left[\frac{D_0^t(X^{t+1},Y^{t+1})}{D_0^t(X^t,Y^t)} x \frac{D_0^{t+1}(X^{t+1},Y^{t+1})}{D_0^{t+1}(X^t,Y^t)}\right]^{1/2} \tag{3}$$

The components that are inside the brackets represent the output-based Malmquist productivity indices. They are defined by Caves et al. (1982). The first component inside the brackets is being measured with respect to period t technology while the second component is measured with respect to the t+1 technology. If the value of MI_0 is greater than 1 it indicates productivity progress and vice versa, if MI_0 is less than 1 it indicates a decline in productivity. In the case when the index is equal to 0 it denotes that there was no change in productivity between periods t and t+1. This equation is further decomposed in order to show changes in technical efficiency and changes in frontier technology (Fare et al., 1994). It can be presented as follows:

$$MI_0^{t,t+1} = \frac{D_0^{t+1}(X^{t+1},Y^{t+1})}{D_0^t(X^t,Y^t)} x \left[\frac{D_0^t(X^{t+1},Y^{t+1})}{D_0^{t+1}(X^{t+1},Y^{t+1})} x \frac{D_0^t(X^t,Y^t)}{D_0^{t+1}(X^t,Y^t)}\right]^{1/2} \tag{4}$$

The efficiency change between period t and t+1 is measured by the ratio outside the brackets, while geometric mean inside the brackets measures the shift in the production frontier between two-time period t and t+1. Further on efficiency change presented in equation (4) can be decomposed into pure and scale efficiency, where pure technical efficiency refers to the MFIs ability to avoid waste by producing as much output as input allows, or on the other hand by using as little input as it is being allowed by output production. Scale efficiency provides information on the MFIs ability to work at its optimum:

$$Efficiency\ change = \frac{D_{VRS}^{t+1}(X^{t+1},Y^{t+1})}{D_{VRS}^t(X^t,Y^t)} x \frac{D_{CRS}^{t+1}(X^{t+1},Y^{t+1})/D_{VRS}^{t+1}(X^{t+1},Y^{t+1})}{D_{CRS}^t(X^t,Y^t)/D_{VRS}^t(X^t,Y^t)} \tag{5}$$

Pure efficiency change   Scale efficiency change

D_{CRS} – the output distance function for constant return to scale (CRS)
D_{VRS} – the output distance function for variable return to scale

The MPI represents a measure of total factor productivity growth (TFP). Values greater than one (in all of the previously explained formulas) are an indication of an improvement in productivity, efficiency and technology from t to t+1 period, and vice versa, values lower than one indicates a decrease of performance over an observed time period (Bassem, 2014).

3.2. Data and variables

Due to constraints related to data availability, data used in this study are obtained from several sources: Official reports on the microcredit system published by the Federal Banking Agency and Banking Agency of Republika Srpska, the MIX market database, reports prepared and published by the Association of MFIs in B&H (AMFI) covering the period from 2008 to 2013

and financial reports prepared by the MFIs and published on their official websites. The sample consists of 10 MFIs (80 observations) and the study covers the period from 2008 to 2015. Out of 10 MFIs, 9 of them are registered in FB&H and one is from B&H-RS. We included all MFIs for which we could collect data on a consistent basis for the previously stated time period. All the monetary data are in BAM (Bosnian Convertible Mark).

It should be emphasized that input and output selection is a crucial step in the analysis of financial institution (Serano-Cinca et al., 2009), however, there is still no clear guideline for researchers on how to choose between various specifications. In addition, unneeded increases in the number of inputs and outputs should be avoided (Ramanathan, 2003). After a detailed review of the available literature on DEA applications we decided to develop a model with two inputs and two outputs. As inputs we selected total assets and number of employees and for the outputs, financial revenue and gross loan portfolio. The number of employees and total assets are our labor and capital variables, while the number of employees addresses the level of efficiency in managing human resources, total assets variable reflects the quality of asset management in one MFI. On the output side, gross loan portfolio is one of the main outputs in the production process of MFI while financial revenue is used as one of the proxies for financial sustainability. A link of the mentioned variables with available literature is summarized in Appendix 1.

Table 1. presents descriptive statistics of the input and output variables we used in the econometric analysis of productivity changes. The table includes data on mean, standard deviation, minimum and maximum values of the sample that include 10 MFIs and 80 observations and covers the period from 2008 to 2015.

Table 3 Descriptive statistics of variables (inputs and outputs)

		Units	N	Minimum	Maximum	Mean	Standard Deviation
Outputs	Groloan	BAM '000	80	1402	228088	57408.06	6655.78
	Finrev	BAM '000	80	134	42124	12723.04	1338.69
Inputs	Totas	BAM '000	80	1532	251173	69145.44	7835.32
	Noemploy	Numeric	80	8	338	166.55	11.15

Source: Author's computations

It could be concluded from the results we got that the variables we used for our analysis significantly vary among the MFIs' sample. The sample consists of large and small MFIs when measured in terms of gross loan portfolio (Groloan) and total assets (Totas) among others.

Progress in the microfinance sector in Bosnia and Herzegovina

Microfinance in B&H started to develop after the war that happened in the nineties, when the microcredit model was proposed as one of the tools for post-conflict recovery and reconstruction (Bateman & Sinkovic, 2017). The majority of MFIs operating today started with their activities during 1997 (Berryman & Pytkowska, 2014) where initial support was

mainly provided by the World Bank through its Local Initiatives Project (LIP) (WB, 2005). In the period from the late 1990s when there was almost no microcredit activity, was by 2009 the second country in terms of microcredit penetration (Bateman, 2012).

MFIs' supervision in B&H is at the entity level, and based on the latest reports (as of March 2018) published by the Federal Banking Agency and Banking Agency of B&H-RS there are 12 MFIs with a license for business operation (11 are non-profit organization and 1 of which is a for-profit organization) in FB&H and 13 MFIs in B&H-RS. Of those 13 MFIs, 9 are for-profit institutions and 4 non-profit organizations (FBA, 2018; ABRS, 2018).

Overall, when compared to other financial institutions only small numbers of studies are focused on MFIs and their efficiency (Widiarto & Emrouznejad, 2015), and when speaking about B&H, there is a serious research gap (Efendic & Hadziahmetovic 2017). To the best of our knowledge there is only one study that covers "two-dimensional" efficiency of MFIs in B&H. Efendic & Hadziahmetovic (2017) investigated MFIs social and financial efficiency through application of Data Envelopment Analysis. The study covered the period starting in 2008 and ending in 2015 and utilized data for 15 MFIs. Results of the empirical analysis showed that there is a suboptimal level of both financial and social efficiency, where financial efficiency levels slightly outperformed those of social efficiency. The study also analyzed the influence of the Global Financial Crisis, and the results showed that MFIs recorded a declining trend in efficiency up to 2010. It could be concluded from the facts mentioned above that there is much space for improvement in MFIs utilization of inputs and that due to lack of available literature it would certainly be useful to conduct additional research on this matter.

Results and discussion of the results

Following the approach proposed by Fare et al. (1994) we have calculated output-oriented Malmquist index, where values of the index which are larger than one indicates positive TFP growth and vice versa, MPI lower than one shows a decline of the TFP over the analyzed period. In order to be able to provide the information on the sources of productivity change we decompose it into technological change (TECH) and technical efficiency change (EFCH), where TFPCH=technological x technical efficiency change. In the case when we have improvement in the technological change it is considered as an improvement in the best-practice frontier, while the technical efficiency change shows the movement of the industry towards the frontier. Further on, there is a possibility to conduct the decomposition of technical efficiency change into scale change (SECH) and pure efficiency change (PECH). The results are presented in Table 2.

Table 4 Malmquist index summary of annual means

Year	EFFCH	TECH	PECH	SECH	TFPCH
2008-2009	0.922	1.017	0.951	0.969	0.938
2009-2010	1.021	0.898	0.991	1.031	0.917
2010-2011	1.003	1.06	1.035	0.969	1.064
2011-2012	1.058	0.916	1.023	1.034	0.969
2012-2013	1.011	0.939	1.009	1.003	0.949
2013-2014	0.963	1.011	0.969	0.994	0.974
2014-2015	0.971	1.054	0.998	0.973	1.023
Mean	0.992	0.983	0.996	0.996	0.975

List of abbreviations: EFFCH-technical efficiency change; TECH-technological change; PECH-pure technical change; SECH-scale effciency change; TFPCH-total factor productivity change
EFFCH=PECH x SECH
TFPCH=TECHCH x EFFCH

Source: Author's computations

Overall, the results showed that the B&H micro finance industry has averaged -2.5% of TFPCH, suggesting a decline in MFIs performance in the period from 2008 up to 2015. Results also show that the average annual rate of technical efficiency change is equal to -0.8% while the rate of technological change is -1.7%. This suggest that a decrease in TFPCH is more a result of the decline in MFIs technology, or moving the frontier than from technical efficiency drop.

When we take a look at the decomposition of the technical efficiency change, our results reveal that pure technical change and scale efficiency change are the same. This means that decline in technical efficiency is on average affected in the same percent by a decline in managerial practice (pure technical efficiency) as well as by a drop in the optimum size of MFIs (scale efficiency). These results suggest that individual MFIs have to put more effort into the management of their inputs and outputs, and to increase their managerial skills and knowledge. This could be a long run strategy for some MFIs to build competitive advantages to their counterparts. In addition to this, the size of some MFIs needs to be adjusted to be optimal to their capacities to be able to exhibit economies of scale. Otherwise, they will perform below the average efficiency of the sector.

Figure 1 Malmquist index summary of annual means
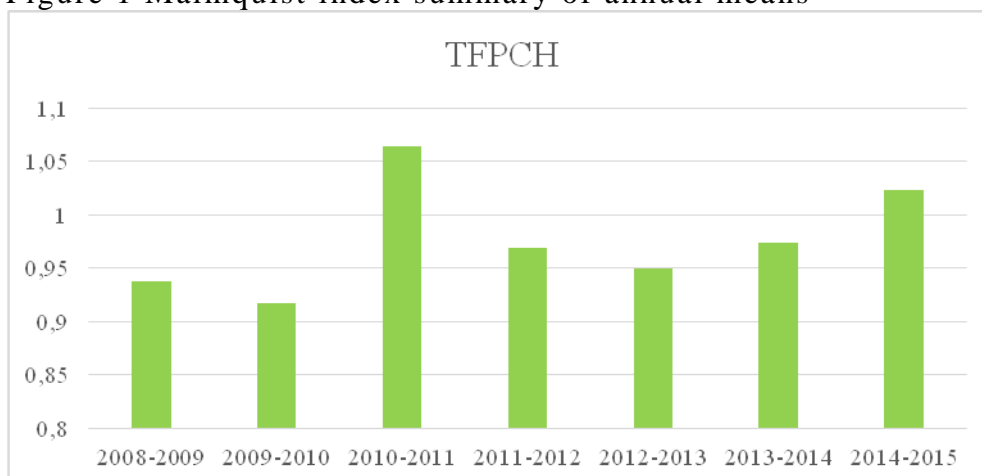
Source: Authors

Results of the changes in Malmquist index given in Figure 1 show that the microfinance industry has an overall productivity decline of -6.2 %, and -8.3% in the years 2008-2009 and 2009-2010, respectively. These years are part of the financial crisis period. However, the year 2010-2011 has a positive TFPCH at 5% suggesting that measures undertaken during the crisis period by MFIs managements resulted in an increase of their productivity. In addition to this, a negative change was recorded in 2011-2012; 2012-2013 and 2013-2014 with a decline of 3.1%, 5,1% and 2.6 respectively, which indicates crisis lag effects in MFIs in B&H occurred. Or, crisis exhibit much longer that it was expected and recorded in other studies. Research conducted by Efendic &Hadziahmetovic (2017) also showed that due to the negative effects of the Global Financial crisis efficiency levels reached their lowest values within the period 2008-2011. Finally, the last year in our study period showed to have a positive change in productivity suggesting that the effects of the crisis are ending.

However, considering the individual efficiency change for the MFIs in our sample, the results showed that changes are significantly different among the analyzed MFIs. From Table 2. and Table 3. it could be concluded that the main source of decrease in TFP is attributed to the technological efficiency change as the results showed that none of 10 MFIs from the sample have shown improvement in "TECH". When analyzing technical efficiency change, 4 out of 10 MFIs have shown improvement in "EFFCH". It is obvious that the main reason for the overall TFPCH decline is attributed to the negative change in TFPCH for 9 out of 10 analyzed MFIs (90%). Hence, overall technological efficiency change as well as the technical efficiency change have a negative sign.

Table 3 Malmquist index summary of BIH MFIs means

	EFFCH	TECH	PECH	SECH	TFPCH
MFI 1	0.978	0.973	1	0.978	0.951
MFI 2	1	0.974	1	1	0.974
MFI 3	0.991	0.977	1	0.991	0.968
MFI 4	0.992	0.992	0.992	1	0.984
MFI 5	1.007	0.993	1.007	1	1

MFI 6	1.003	0.983	1.003	1	0.986
MFI 7	1.007	0.991	1	1.007	0.997
MFI 8	1.002	0.983	1	1.002	0.984
MFI 9	0.965	0.985	0.974	0.99	0.95
MFI 10	0.977	0.981	0.985	0.991	0.958
Mean	0.992	0.983	0.996	0.996	0.975

Source: Author's computations

As previously mentioned, the decomposition of the Malmquist index allows us to determine the sources of the productivity growth. During the analyzed period our results show that both pure technical efficiency and scale efficiency decreased by 0.5%.

5. Conclusion

Study examined the productivity change in B&H MFIs during the period from 2008 to 2015 by employing the Malmquist productivity index. The sample included 10 MFIs and a balanced panel dataset of 80 observations. After a detailed analysis of the available literature we decided on a combination of input and output variables. For our analysis we specified a combination of two inputs and two outputs: total assets and number of employees as inputs and gross loan portfolio and financial revenue as outputs.

The results of our empirical analysis indicate the following: The empirical findings indicate a decline in TFP in most of the analyzed periods with an average decrease of 2.5%. The study reveals an average technological decline of the industry for 1.7%, while technical efficiency change is recorded at the level of -0.8%. Even though results showed recovery during the period 2009-2013, due to technological inefficiencies the average TFP change remains negative. Our results reveal that none of the 10 MFIs from the sample have shown an improvement in TECH over the analyzed time period. Hence, policy makers need to enhance technological progress in order to meet their strategic objectives in B&H MFIs. Further, the decomposition of MPI allowed us to investigate sources of productivity change. Accordingly, the results of our analysis showed that during the observed period, B&H MFIs experienced a decrease of 0.5% in both pure technical and scale efficiency, so it can be concluded that both bad management practices and work which is not on the optimal scale are sources of the average productivity decline. Results of this analysis strongly support previous analysis conducted by Efendic & Hadziahmetovic (2017) suggesting that MFIs in B&H have efficiency levels which are quite below optimal level and that MFIs are undoubtedly wasting their resources.

The study also indicated that MFIs in B&H are using too much labor (employees) and capital (assets) for the level of their outputs. When speaking about crisis and post-crisis period results, changes in the Malmquist index have shown that the microfinance industry has an overall productivity decline in the study period of -6.2 % and -8.3% in the year 2008-2009 and 2009-2010 respectively. The years mentioned are part of the financial crisis period. However, in the years 2010-2011 results have shown a positive TFPCH at the level of 5% suggesting that measures undertaken by MFIs management during the crisis resulted in an increase of their productivity. In addition to this, a negative change was recorded in 2011-

2012; 2012-2013 and 2013-2014 with a decline of 3.1%, 5,1% and 2.6 respectively, which indicates that a crisis lag effect in MFIs in B&H occurred, and that the crisis lasted much longer than was expected. Also, a potential cause of this subsequent decline in productivity could be that MFIs did not apply adequate measures that would lead to sustainable recovery and increase in productivity level but rather focused on short-term results.

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Appendix 1 Inputs/Output variables – Link with available literature

Inputs	Definition	Link with Literature	Units
Noemploy - Employees	The number of individuals who are actively employed by an MFI. This number includes contract employees or advisors who dedicate the majority of their time to the MFI	Bassem(2008). Hassan and Sanchez (2009). Sedzro and Keita (2009). Kipesha (2012). and Haq et al. (2010).Widiarto and Emrouznejad (2015).Wijesiri et al. (2015). Lebovics et al. (2016). Mia and Bassem (2016). Efendic and Hadziahmetovic (2017)	Numeric
Totass- Total assets	Total of all net asset accounts.	Bassem (2008). Gutiérrez-Nieto et al. (2009). Hassan and Sanchez (2009). Widiarto and Emrouznejad (2015). Wijesiri et al. (2015). Tahir (2013). Kipesha (2012). Efendic and Hadziahmetovic (2017)	BAM ´000

Outputs	Definition	Usage in Literature	Units
Finrev - Financial Revenue	Revenue from loan portfolio. It is used as an output in the production approach and a proxy for *sustainability* since an MFI that cannot collect enough revenue will not be viable to operate in the long run by itself	Gutiérrez-Nieto et al. (2009). Hassan and Sanchez (2009). Kipesha (2012). Widiarto and Emrouznejad (2015).Wijesiri et al. (2015). Lebovics et al. (2016). Mia and Bassem (2016). Efendic and Hadziahmetovic (2017)	BAM ´000
Groloan - Gross Loan Portfolio	The outstanding principal balance of all of an MFI's outstanding loans. including current. delinquent. and restructured loans.but not loans that have been written off. It does not include interest receivable	Gutiérrez-Nieto et al. (2007). Gutiérrez-Nieto et al. (2009). Kipesha (2012). Hassan et al. (2012). Widiarto and Emrouznejad (2015).Lebovics et al. (2016). Efendic and Hadziahmetovic (2017)	BAM ´000

Appendix 2. List of MFIs included in the sample

Name of MFI	Web address
EKI Sarajevo	www.eki.ba
LIDER Sarajevo	www.lider.ba
LOK Sarajevo	www.lok.ba
MI-BOSPO Tuzla	www.mi-bospo.org
MIKRA Sarajevo	www.mikra.ba
MIKRO ALDI Gorazde	www.mikroaldi.org
MIKROFIN Banja Luka	www.microfin.com
PARTNER Tuzla	www.partner.ba
PRVA ISLAMSKA MCF Sarajevo	
SUNRISE Sarajevo	www.microsunrise.ba

THE EVOLUTION OF FARMLAND REITS IN BULGARIA: THE INCOME TAX PERSPECTIVE

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Abstract

Bulgaria is among the few new member states of the EU where two segments within the real estate investment trusts' (REITs') industry proliferate. The first segment consists of special purpose investment companies (SPICs) that securitize farmland, and the second - encompasses SPICs that securitize other real estates. The bulk of economic literature is devoted to the assessment of the inherent risk and return on REITs portfolio and the price volatility of their securities. Given Bulgarian traditions in agriculture, the current paper focuses on how income taxation impacts the development of farmland REITs in this country.

Relying on primary data compiled from financial statements and annual reports of Bulgarian REITs, their income for distribution and its determinants have been analyzed. The income for distribution constitutes a destination for income taxes, whatever the level they may apply to. Further, the taxation of REITs securitizing farmland is theoretically embedded in the framework of two tax policy requirements – encouragement and neutrality. The critical evaluation of their feasibility in Bulgaria shows that tax policy is capable of encouraging the development of farmland REITs through more neutral tax treatment across investors, transactions and modes of investment.

The current paper highlights also the relevance of the tax transparent arrangement for simultaneously reducing the income tax burden and improving the uniform tax treatment of SPICs in Bulgaria. The methodology of the manuscript is based on the complementary application of the normative, comparative and interdisciplinary approaches.

Keywords: REITs, income for distribution, tax neutrality, tax encouragement, tax transparent arrangement.

JEL classification: H25, H29, G28, G35

1. Introduction

Bulgaria joined the "club" of jurisdictions with real estate investment trusts (REITs) in 2003 when the Act on the Special Purpose Investment Companies was adopted by the National Assembly. By 2003, France had also introduced such investment vehicles, while other developed market economies still lacked suitable legislation – UK, Germany, Spain.

Initially, REITs were set up in the USA in the1960s. In order to acquire such status there, any legal entity (corporation, trust, association) has to pass several tests, i.e. shareholders, revenue, asset, minimum dividend pay-out ones (Internal Revenue Code, §856). Hence, some authors believe that the trust is not just a legal form for doing business, but it is a conscious choice of a tax regime (Hudson-Wilson, 2002, p.704).

Having studied their origin extensively, researchers point that REITs facilitate investors experiencing capital and/or knowledge "shortage" but willing to expose to real estate (Garrigan & Parsons, 1997). Further, the comparative analysis draws attention to some peculiarities of REITs (Zhishev, 2003;Tokushev, 2009). First, similar to closed-end investment funds the REITs cannot redeem own shares upon shareholders' requirement. Second, these entities are allowed to invest only in real estates. It renders REITs different from open-end and closed-end investment funds whose operations are based on risk diversification. Third, contrary to investment funds REITs can diversify their financial sources.

Special purpose investment companies (SPICs) are, by analogy, Bulgarian (BG) REITs set up as joint stock ones. They should be licensed by the Financial Market Supervision Authority to issue and sell own securities to the public. The money from the latter is invested in acquisition of given assets. Bulgaria adheres to international experience. Accordingly, a BG-SPIC is allowed to securitize receivables or real estate, but not a combination thereof. The SPICs are part of the financial sector, but their activities beyond investment occur through one or more servicing company/ies (Act on SPICs, Art. 18 (2)). In the latter, BG-REITs are allowed to put max.10 % of their capital.

Real estate constitutes a *non-homogeneous* group of assets which is replicated in the *heterogeneity* of entities providing special purpose investment vehicles. There are two types of them in Bulgaria. The first one invests in farmland, while the rest – in other immovable property (retail, industrial, office, residential, holiday property, etc.).[1]

The objective of the instant paper is to critically evaluate the impact of the income tax design on the development of BG-REITs that securitize farmland. The analysis of the possible impact is further restricted across two dimensions that seem to be contradictory at first glance – tax neutrality and encouragement of BG- REITs.

The rest of this paper is organized as follows. In the second section attention is paid to some issues concerning the derivation of REITs' income for distribution. The latter constitutes the tax object, hence, it is crucial for taxation framework of these specific entities in Bulgaria. In the third section comparison is drawn between farmland and non- farmland BG-SPICs concerning distribution patterns and their main determinants. In the fourth section several theoretical concepts of REITs tax design are analyzed in terms of neutrality and encouragement. Their applicability in Bulgaria has been further analyzed and assessed. The fifth section concludes.

2. Income for distribution as tax destination

2.1. Definition of the income for distribution in Bulgaria

Against the background of corporate tax exemption, insufficient attention is paid to the method of computation and the factors determining the amount of income that REITs have to distribute annually. On the one hand, income for distribution constitutes a *tax destination* - a relevant component of the tax design applied to the REITs. The former is the base for application of income taxes, whatever the level they are imposed to. On the other hand, for the individual and institutional investors the particular amount of distributed income (i.e. dividends) is one of the motives and incentives to put money into the SPICs.

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[1] For the sake of brevity for the immovable property, different from farmland, in this paper the term "non-farmland" will be used.

The rules that clarify the method of computation are non-complicated compared to those which determine the tax–adjusted profits of any "ordinary" corporation. Though, similarly to computing taxable profit/loss of the company, the legislator applies adjustments for determining SPIC's income for distribution[2]. In determining the latter, the Act on the SPICs in Bulgaria provides for not taking into consideration the positive effect of any subsequent (re)assessments of underlying farmland. The assets' evaluation follows their *life cycle within the company*. By the time the asset is acquired, its acquisition price could encompass the purchase price and any additional transaction cost (IAS 16, para 16; IAS 40, para. 20). Concerning the subsequent restatement, the fair value method has to be adopted. Thus, the SPIC should appoint an independent appraiser firm to determine and argue any change in the fair value of the land possessed. If it tends to appreciate, current profit from the reassessment accrues which, *ceteris paribus*, increases the annual profit of the SPIC. Yet, the profit from the mere reassessment of agricultural land is ignored when calculating *the dividends to be paid out* by the SPIC. The reason for excluding the profit from reassessment is that it is a *paper* one, which *might* have been received *if* the land has been sold under market conditions. In reality, the ability of the SPIC to pay income out of the *paper* profits to shareholders does not increase - the profit from reassessment is thus a potential one. Therefore, it is ignored for the purpose of deriving the income for distribution that the farmland SPIC owes.

The opposite is also true – if the value of land depreciates, then current loss occurs and erodes the annual profit of the entity. This current loss, nonetheless, is taken into consideration for determining the income for distribution by the farmland BG-REITs. Why? The loss occurred is also hypothetical since there might be a reduction in the future stream of benefits to the SPIC *only if* the latter would have sold out cropland at a decreasing market price. This legal provision aims to financially protect small investors, who are not in a position to influence the decision-making of the board of directors and the shareholders' meeting. Despite the hypothetical loss, SPIC's ability to pay out dividends does not diminish. Therefore, any profit/loss from subsequent assessment is recognized for accounting purposes only. It is reported on the comprehensive income statement of the SPIC.

The amount of income for distribution to SPIC's investors integrates the gain/loss accrued anytime when *real* alienation of farmland takes place. Moreover, it does *not* matter if the ownership change occurs *through sale or financial leasing* of the asset. In this respect, complete neutrality is preserved such that the SPIC makes the choice of the *alienation method*. Any capital gain from an *ownership transfer* increases SPIC's net income and is subsequently distributed to investors. The reverse is also true, i.e. when there is a capital loss from the alienation, the amount of the former decreases the net annual income. Taking the financial effect from the transactions of land ownership into the income for distribution is justified as the former generates a real, not a probable gain/loss. Moreover, the latter directly affects SPIC's ability to pay out dividends to its investors' clientele.

Depreciation allowances (DA) also matter for the income for distribution. Moreover, as BG-SPICs are *non-homogeny* in terms of the immovable property acquired, the interpretation of the depreciation allowances deserves further analysis. DA have different implications for both types of REITs and the ordinary corporations in Bulgaria. These implications concern the *non-current assets'* definition and structure. If the *immovable*

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[2] *The tax-adjusted profit* of the ordinary corporation is the equivalent term to *the income for distribution* of the SPIC. For the corporation, there are cost and revenue that are not recognized for tax purpose in the year they accrue. The former are tax recognized in subsequent periods, which differ from those when they were recognized for accounting purpose.

property is held for letting it or for the sake of capital appreciation or for both, the former is considered as *investment property* (IAS 40, para 7). The regulations do not provide for depreciation allowances on such a property for accounting, but *only for tax, purposes* (Dosev, 2014, p.8*)*. The immovable assets used in the production/distribution activities are attributed to the *long-term tangible assets* and underlie a depreciation either for accounting or for tax purposes (IAS 16, para 6). The above-mentioned rules diverge both across types of non-current assets and of entities holding them. The rules are interpreted across different entities and non-current assets below.

Table 1: Depreciation allowances – theoretical interpretation and financial effect in Bulgaria

	Type of assets		Integration into the net income (NI)
	Investment properties	Long-term tangibles	
Ordinary corporation	Depreciation allowances (DA) accrue only for tax - , but not for accounting purpose	DA accrue either for accounting or for tax purpose	NI annually increased by the accounting DA (+), while annually reduced by tax allowed DA (-)
SPIC investing in non-farmland	DA do not accrue for accounting purpose; irrelevant for tax purpose	DA accrue for accounting; irrelevant for tax purpose	After computation - NI adjusted according to the Act on SPICs, Art.10.
SPIC investing in farmland	No DA at all	DA accrue for accounting; irrelevant for tax purpose	After computation - NI adjusted according to the Act on SPICs, Art.10.

Source: Author's adaptation according to: The Act on corporate income taxation,
The Act on Special Purpose Investment Vehicles and IAS.

From the brief presentation in Table 1 some analysis seems appropriate. For ordinary companies, the amount of the depreciation allowances for tax purpose consists of the sum of DA attributed to both types of assets – investment properties and long-term tangibles. The accounting DA consist only of those accrued for long-term tangibles. While calculating the tax-adjusted profit, the *corporate* net income is increased by the amount of DA for accounting purpose and decreased by tax recognized DA. As the latter amount usually tends to be larger than the former, it can be suggested that an ordinary corporation is going to report, ceteris paribus, smaller taxable profit, thereby saving corporate income tax.

As regards SPICs, the amount of the depreciation allowances consists only of those accrued for long-term tangibles. This amount is relevant for calculation of SPIC's net income, but not for the dividends. Therefore, DA for tax purpose is irrelevant. As the *farmland does not underlie any depreciation*, ceteris paribus, these BG-REITs are supposed to report higher net income and distribute more dividends than their non- farmland counterparts.

In sum, DA matter only for the net income of both types of BG-REITs. DA do not affect income for distribution, resp. dividends that are the tax base, which is subsequently imposed at the hands of investors. Hence, the structure of the non-current assets acquiredby both types of BG-REITs could make the difference concerning dividends paid out and income taxes due.

3. Distribution patterns of BG-REITs

3.1.   REITs in Southeast Europe: too squeezed or too generous?

By the end of 2017, nine farmland and fifty one non-farmland special purpose investment companies operated in Bulgaria (Association of SPICs in Bulgaria, 2017, p.32). The provision of special purpose investment vehicles in this part of Europe is institutionalized also in Greece and Turkey. In Greece four such entities with market capitalization of €2,189 million (EPRA, 2017, p. 61) operate, while in Turkey there are 31 REITs with market value of €7,131 million (Hepsen, A., Berberoglu, M., Aydin, O., 2017).

Bulgaria has implemented special purpose investment vehicles for 15 years and the market capitalization of all BG-REITs in 2017 was €396 million (EPRA, 2017, p.18). It renders this industry much fragment and "overpopulated". The competition "sorts out" mainly entities investing in property different from agricultural land. By the end of 2017, twelve out of the 51 non-farmland SPICs were in a process of going bankrupt or in liquidation. The Financial Supervision Commission revoked their licenses. Still other ten entities reported not being able to distribute dividends because of losses or carrying them forward. At that time, no one of their farmland counterparts was in bankruptcy/liquidation or experienced a financial difficulty (Association of SPICs in Bulgaria, 2017, pp.32-34).

Dividend smoothing is not a relevant policy for the SPICs, as the legislation requires them to distribute annually a *minimum share* of their adjusted net income[3]. It is set too high, so that little discretion remains with the shareholders' meeting. Bulgarian SPICs are obliged to pay out to investors *at least* 90% of the *income for distribution* (Act on the SPICs, Art. 10(1)).

In contrast to Bulgaria, in the first decade after their launch in 1995, Turkish (TR) REITs were not obliged to annually distribute dividends, which constituted a competitive advantage (Aydinoglu, 2004; Corporate Credit Rating Euroasia, 2015). After acquiring more experience and competitiveness, the legislation still requires from TR-REITs to pay out "the lesser of the net profit calculated in line with the Turkish Commercial Code or in line with the Capital Market Board Regulations" (PwC, 2017, p.69).

Regarding income distribution requirement, Greek real estate investment companies (REICs) have to pay to their investors not less than 35% (2012), increased to 50% (2015) of the annual net profits (Mitrakos, T., Vlachostergiou, V, Tsolacos. T, 2013; PwC, 2015). Despite such a relatively moderate distribution threshold, further discretion was built-in in the legislation. For Greek REICs, experts from PricewaterhouseCoopers (PwC) point that "exceptionally, and if so provided in the Articles of Association, the dividend distribution …[to] be waived following a resolution of the general assembly in cases of creating a special reserve from profits other than gains, or converting profits into share capital" (PwC, 2015, p.26). One possible motivation for giving Greek and Turkish REICs more financial freedom over their distribution policies is to enable the enhanced growth of this industry by reinvesting substantial part of profits into new real estate projects.

Against the background of Greece and Turkey, the Bulgarian 90% minimal share for dividends seems not a mature enough decision given its emerging and tiny capital market. Back in 2003, that outcome was influenced by the capital shortage and the expectation that Bulgaria may become an attractive investment destination due to the very low price level of the cropland, the competitive advantage of its agriculture and its forthcoming accession to the EU.

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[3] Its amount is equal to the income for distribution.

3.2.   The REITs in Bulgaria and their commitment to investors

As previously stated, despite the huge number of SPICs and their relative low market value, Bulgaria has a *unique experience* with two segments emerging within this industry. In the instant sub-section, we compare both segments in terms of separate financial data - net income (NI), income for distribution (IfD) and dividends paid out. The latter constitute the tax destination for any possible income taxation of investors (corporate and individual). Comparing both REITs, the focus on the farmland ones remains since we try to outline their income for distribution and its main determinants.

Both panels in Figure1 below present on a cumulative basis the dynamics of the afore-mentioned financial data between 2009 and 2017[4]. In the case of non-farmland SPICs (left panel), data is aggregated annually for those of them which used to pay out dividends per outstanding shares. The same data for BG-REITs investing in agricultural land (right panel) encompasses all of them due to their small number.

Figure 1*:* Performance of BG-REITs: net income, income for distribution and dividends to shareholders, 2009-2017 (BGN'000)
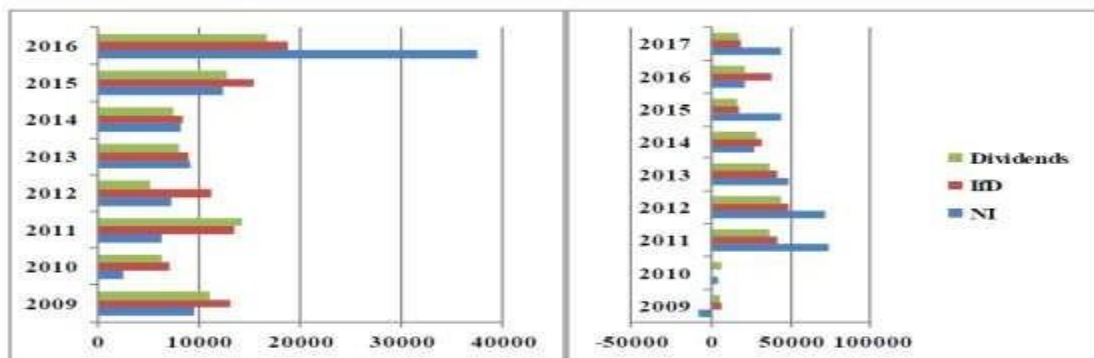
Source: Author's calculation based on the Annual Report of Activities and the Annual Financial Statements, different BG-REITs[5], 2009-2017.

Both segments of the BG-REIT's industry report positive net income (profit) throughout the period in consideration, except in 2009 when the global crisis negatively affected the farmland REITs. The latter were capable to distribute dividends among their shareholders despite recording a cumulative loss of BGN 7,2 million, which points to a missing ability to pay. In the next years, it turns to a cumulative profit of more than BGN 70 million (2011, 2012). Since then, in absolute terms, the financial results of the farmland SPICs tend to outperform those of their few non–farmland "colleagues" that are committed to their investors by regularly distributing dividends. From the left panel of the diagram, it is discernible that the financial performance of the non-farmland REITs was boosted in 2016. According to Collier's International study, it was due to sales volume of commercial properties, although the former cannot be fully attributed to these entities.The revenue therefrom in 2016 was €262 million, while in 2017 it reached €957 million. The main driving

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[4] The period is restricted since original data sources uploaded on the entities' web-sites - the Annual Reports and Financial Statements – are from 2009/2010 or even from 2012 onwards.
[5] Their number varies within the period in consideration.

force behind the peak in 2017 were South- Africa-domiciled equity REITS. Even though an impressive cumulative revenue is recorded, another study by Cushman & Waкefield Forton argues that the EU-resident funds tend to substitute Bulgaria for Romania, Hungary and some smaller cities in Poland. (Association of the SPICs, 2018, pp. 47-50)[6].

In addition, having regard to DA, non-farmland SPICs had been holding the bulk of their immovable property as investment one. Accordingly, the share of long-term tangibles in the noncurrent assets dropped from 21% (2009) to the tiny 0,09% (2016). Thus, the cumulative amount of DA for non-farmland entities, which distributed income, was BGN 780,000 (2009) and decreased to the negligible BGN 31,000 (2016). It can be concluded that in terms of DA both types of BG-REITs converge. Therefore, DA is not a "responsible" determinant for the smaller amount of dividends paid-out by non-farmland SPICs during the analyzed period.

In the right panel of the Figure 1, the usual pattern, which the financial indicators of BG-farmland REITs follow from 2009 to 2017, is that of the income for distribution (tax base) being smaller than the net income (annual profit). The latter has been reduced by certain amounts (Act on the SPICs, Art.10), which constitute current profits. They are due to the steady appreciation and regular reassessment of the agricultural land's value. It is a relevant determinant of both - the annual net income and its subsequent adjustment for distribution by farmland SPICs. The dynamics of average sale and rental price of this asset can be observed in Figure 2.

Figure 2. Average price and rent of farmland in Bulgaria, 2010 – 2017 (BGN[7])
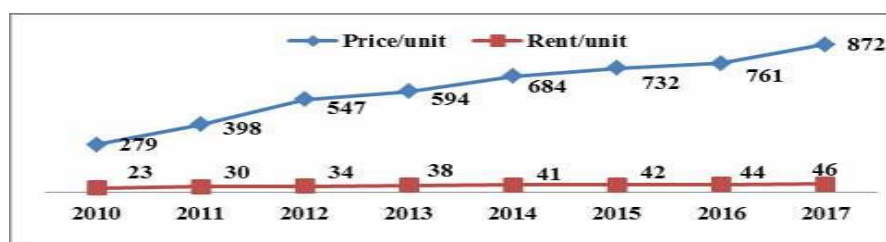
Source: National Statistical Institute, www.nsi.bg

Since 2010, the unit price has more than tripled due to Bulgaria's endowment with fertile agricultural land and its very low starting price prior to and after EU accession. The subsidy provided to farmers within the EU common agricultural policy is also a substantial driver for the persistent growth of market prices. Many of the farmland BG-SPICs launched their activities still in 2004, so that by 2017 they were capable to accumulate substantial profits from land's value appreciation, its regular reassessment and recognition in the financial statements. As the profit therefrom has to be disregarded for distributive purposes, the income for distribution is outperformed by the net income[8] disclosed by farmland BG-SPICs.

An additional determinant of this distribution pattern of financial data is related to the rental price per unit of cropland. The bulk of revenue for entities, holding agricultural land in the long-term, comes from letting it, which is their main activity. As it can be seen from

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[6] The studies of Collier's International and Cushman & Waкefield Forton are cited and interpreted according to: Association of SPICs. 2018. Bulletin for the First Trimester of 2018. Appendix, p. 47, p.50.
[7] One Euro has been exchanged for 1.95583 BGN since 1.07.1997.
[8] Both calculated on a cumulative basis.

Figure 2, between 2010 and 2017 the rent/unit of land doubled that favours either the net income or the distribution of dividends.

In the period of consideration, farmland BG-SPICs held their commitment to investors and distributed more generous income than their non-farmland counterparts. The dividends constitute an abundant taxable base that could provide lavish tax revenue to the government. The revenue potential of distributed income by SPICs hinges on the income tax design. Since these entities belong to the financial intermediaries' category, the state very carefully designs taxation rules to be applied. Henceforth, it is worthwhile critically discussing some theoretical issues of the tax design and their consequences for the special purpose investment companies.

4. REITs - tax policy reflections and implications

4.1. Tax transparent arrangement - "the tax nothing"[9]

Income for distribution of REITs, the tax object we dealt in the preceding section, does not exhaust other relevant tax policy issues related to these entities. Further analysis concerns the choice of the *point of taxation* – at the REIT, the investor or at both levels. It should go "hand in hand" with balancing some goals of tax policy.

First, taxation should not hamper financial intermediaries, including SPICs. The second goal pertains to how to embed there the *tax neutrality* (*uniformity*). It should secure *non-discrimination* across different investors, assets and modes of investment. Tax neutrality requires economic resources to be allocated in terms of the highest return, ignoring tax considerations. Thereby, the compliance and welfare cost of taxation would be minimized (Rosen & Gayer, 2008; Musgrave &Musgrave, 1989).

Concerning special purpose investment vehicles, there are a few non-uniformities in need of "reconciliation". They can be presented graphically as a sequence of stages, at each one a proper political decision has to be taken in order to pertain to tax neutrality. On the graph in Figure 3, several aspects towards more tax neutrality are illustrated.

Figure 3. Aspects of tax neutrality in the domain of REITs
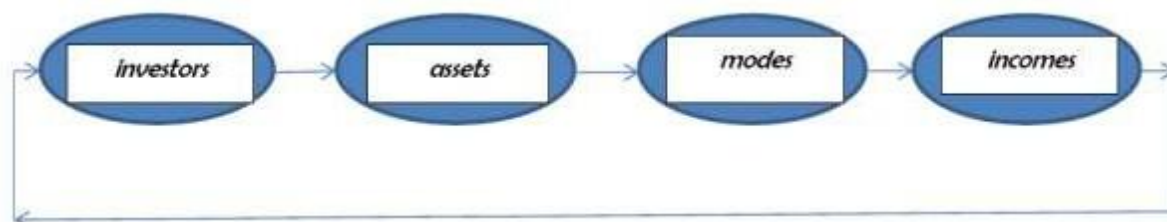
Source: Author's illustration

Four stages of decision-making concerning neutrality can be discerned above. First, the investors in SPICs are non-homogenous – they differ in terms of their professionalism.

Thus, there are individual and institutional ones, both of which are presumed to be tax payers. Some of them, though, might be tax favored. In addition, there are domestic and foreign (non-resident) investors. If the latter have been taxed more, then a home *biasedness*[10]

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[9] The heading's title is taken from: Miller, D.(1997). The Tax Nothing, 74 Tax Notes 619, Feb.3.

[10] It is a process of overinvesting into domestic assets by domestic investors as the transaction cost (incl. taxes) rise if buying (and holding) foreign assets.

occurs and hampers globalization of financial markets. Taxation has the difficult task to treat all investors uniformly in order to be perceived justified and neutral.

The second stage in the sequence (see Figure 3) illustrates the plurality of assets. Since their launch in the 1960s, the investment vehicles have encompassed real estates, mortgage bonds, agricultural land, and receivables. The list of assets is not exhaustive, since *innovation* challenges markets in real estate and financial services. Nevertheless, *for tax purpose* investors have to be indifferent in which asset/s they put their money. The only factor worthwhile considering should be the *highest market return expected*, given investors' *risk tolerance/attitude*.

Third, *modes* of investment refer to the *way of assets'acquisition* – buying them *directly* or *indirectly*, i.e. through shares in SPICs that subsequently invest into a portfolio of properties. Taxation rules should leave investors on an indifference curve, concerning direct or indirect *modes of investment*. Fourth in the sequence of decision-taking (Figure 3) is the *diversity of incomes*. Any portfolio of assets is expected to generate return on investment. Thus, it is important *not to differentiate in tax terms* across many income types stemming from REIT's assets – rents, dividends, interest, capital gain/loss, even penalty in case contracts have been breached.

Along with tax uniformity, the *encouragement* of SPICs is a crucial requirement of the tax policy. It can be achieved with tax benefits, hence, there are some proposals favoring investment funds (Zolt, 1998, p.13). Since SPICs are particular kind of the latter, no tax should be imposed at both levels simultaneously – the investor's and entity's – insofar as shareholders hold their stocks.

In the first proposal, no tax is imposed on any income received by the REIT. In case of a distribution and a withholding tax thereon, the latter is refunded to investors. Taxation is deferred until the shareholders sell their securities. In the second alternative, investors' contribution out of their regular income is tax-free. The subsequent investment income enjoys the same status. In the end, taxation applies upon investor's decision to withdraw money. In most cases, tax legislation restricts the amount of the contribution that provides tax benefits. Such tax regime is adapted and applied also to pension and health-care funds that operate within the private-insurance-sector.

By the time *mass privatization of assets from the socialist past* was underway, tax regimes were customized to the new investment funds. In terms of tax neutrality and development promotion, a *pass through model* scored high. Bulgarian authors acknowledge that the launch of SPICs helped introduce tax transparent entities in the country (Zhishev 2003; Tokushev 2009).

Their arrangement is based on the *integrationist view on corporate taxation*. According to it, a corporation does not possess own identity since its ultimate owners are individuals. Thus, the corporation enjoys the synergies from aggregation of capital and personal endowments – education, training, knowledge, qualification, experience, and intuition. Ignoring the human factor, the corporation *per se* does not have an ability to pay and it cannot be a *tax liable person*. Therefore, they should be imposed with income tax, which has to be levied uniformly on all different sources of income, including personal earnings from a corporation. Such a concept presumes only personal income taxation, rendering any enterprise/corporate levy redundant.

Proponents of income integration promote avoidance of double income taxation. Instrumental to lightening tax burden is *the pass-through arrangement*. Musgrave and Musgrave associate its universality with the "partnership method" of integration where

"…shareholders are treated for tax purposes as if they were partners in an incorporated business" (1989: 376). Still other contributors take an interdisciplinary view, distinguishing civil and common law systems, embedding there "partnerships" and the flow-through system (Easson & Thuronyi, 1998). Zolt's remark on investment fund's operation seems appropriate also for the SPIC since it is "as transparent and allocate(s) all items of income and loss directly to investors. In its purest form, [it] acts simply as a reporting mechanism." (1998:14). In this vein, quite illustrative for the transparency arrangement is its qualification as *"The Tax Nothing"* (Miller, 1997).

The benefits of its operation are associated also with tax collection. Similar to the ordinary corporation, which withholds the personal income tax on the remunerations of its employees (Musgrave & Musgrave, 1989), the SPIC has to determine and collect the income taxes due by its investors' clientele. It is further proposed that it applies to investors' income the highest - or the most common rate (Zolt, 1998, p.14). If the beneficiaries of dividends are taxed at a lower marginal rate, they need to fill in a declaration for a tax refund. Otherwise, the shareholders will benefit from the tax paid by the SPIC which is considered a tax credit reducing the ultimate liability. (Zolt, 1998; Musgrave & Musgrave, 1989). In the end, all physical persons pay tax at the rate which conforms to their own ability to pay.

If the tax focus is shifted from investors to the SPIC, it would be overtaxed if the income imposition applies in tandem with a levy on the *fair value of its assets*. The latter constitutes a wealth tax, which affects the substance, while the income tax distorts the return on assets (Schratzenstaller, 2013, p.19). Concerning the income levy, a problem arises if the tax rate on REIT is different from the rate imposed on the investor. If the tax rate on the entity is bigger, then the shareholder would mind indirect investment and *vice versa*.

More acceptable would be a tax applied simultaneously at the SPIC and at the hands of investors. The *entity* is liable for *retained* income, while *the shareholders* – for the *distributed* one. In an IMF publication Zolt identifies that "[c]ountries that follow this approach …require funds to distribute a substantial portion of their income each year" (1998:16). REITs fit completely into this setting. Indeed, if they pass the test of high minimum share of distribution, they are allowed a deduction for the dividends paid. Moreover, they may be not tax-liable for the income neither distributed, nor retained (Borden, 2015, p.532).

It is a demanding task to adapt an appropriate design for income taxation to REITs. It should integrate two different tax policy requirements: encouraging the development of financial intermediation through improved uniform treatment across investors, transactions and modes of investment. The "invention" of the tax transparent arrangement and its application to REITs' income moves tax theory a step further to the complex economic reality.

4.2. The tax transparent regime of BG-REITs – encouragement through neutrality

It was theoretically argued that *tax transparency* is a suitable design for the *integrationist view* of corporate income taxation. Such arrangement is capable to avoid double income taxation, while preserving the tax statute of investors in any REIT.

The international experience shows evidence for the universal feasibility of tax transparency. It has been utilized successfully in a corporate - as well as in a partnership - and sole-proprietorship setting. Experts from the Tax Foundation cited the Census Bureau that ca 92% of all firms in the USA are pass-through businesses (Tax Foundation, 2017, p.4). Their combined net income "has been persistently higher than corporate income since 1998 except in

2005…The most recent data shows …$1,3 billion in net income, or 63,9% of total business net income in 2011" (Pomerleau, 2015, p.7-8).

When SPICs were launched in Bulgaria, there was a contestable political dispute concerning their exempt income tax status. It was deemed non-neutral and unjustified towards the ordinary corporations. Between 2003 and 2008, the taxation issue around BG- REITs implied much controversy as the then corporate tax rate changed between 15% and 23,5%, while dividends for individual shareholders were additionally imposed at a withholding rate of 17%. Attaching a corporate tax-free regime to BG-REITs in Bulgaria could convert these entities into tax shelters for well off or high net worth individuals. Why?

First, according to Bulgarian legislation, the paid-in capital required upon registration is *min. BGN 500,000,* which is an affordable amount for well-off people to set up such *corporate tax free* entity. In France and Germany, the nominal capital to be fully paid in shall be at least EUR 15 million, in Greece – 25 million, in Hungary – 12 million, while in Turkey – about EUR 6 million (PwC, 2017). Second, a further legal provision, targeting more professional investors, requires institutional shareholders to acquire at least 30% from the REIT's equity by the time of its set up. In fact, there is no legal impediment for this participation to be transferred later to the individual co-owners, once the SPIC becomes operative with shares listed for trade on a recognized stock exchange. Third, a brief look at the ownership structure of BG-REITs is warranted given the persistence of the above-mentioned legal requirements for 15 years in a row.

Figure 4.The ownership constellations in farmland SPICs in Bulgaria, 2017
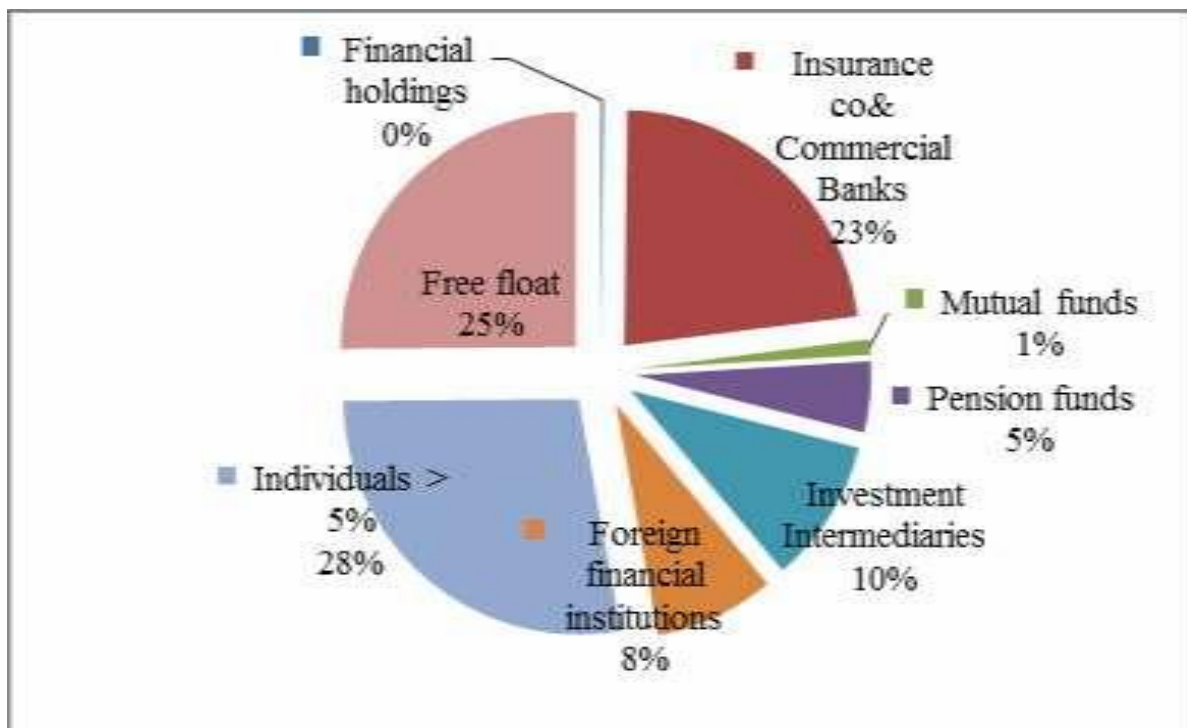
Source: Author's calculation based on data from the Central Depositary, Annual Reports of Farmland SPICs for 2017, Annual Financial Statements of Farmland SPICs for 2017.

From the ownership "picture" taken by the end of 2017 (Figure 4), several conclusions can be drawn. First, almost 50% from the equity capital of the nine farmland BG-REITs belongs to the financial sector. Second, the ownership of the latter is dispersed among various financial institutions given their willingness to diversify portfolios. Third, a substantial part of the capital is concentrated within individuals holding more than 5% of the former[11]. By the end of 2017, the biggest share in the capital of the nine cropland BG-SPICs were held by individuals. Fourth, the free float is 25%[12], while in 2009 it was 34% (Commission on Financial Supervision in Bulgaria, 2009, p. 14), which indicates more concentrated ownership structure than it was 10 years ago.

Some of the conclusions on the ownership constellations in the BG-REITs farmland segment have direct tax implications and explanations. First, the financial sector traditionally bears up to 10% of the corporate tax burden in Bulgaria (Ministry of Finance, Government revenue statistics).

Second, pension and mutual funds use the pass-through arrangements and benefit themselves from the corporate tax exemption. Third, since 2007, individuals, who in 2017 possessed the largest share in the farmland REITs' equity, pay only 5% withholding tax imposed on dividends from the SPICs. In contrast, the bulk of institutional investors receiving dividends shall integrate them with the rest of the revenue. Subsequently, they owe 10% corporate income tax.

In light of the foregoing, it can be argued that BG-REITs in their flow-through arrangement are in a position to favor rich individual investors, providing them with tax benefits. Therefore, this regime is non-neutral and facilitates the large (for Bulgaria) number of REITs. Pass-through arrangement does not warrant complete (pure) tax transparency here, since if distribution of dividends does not occur (in case the SPIC discloses a negative adjusted annual income), the loss is not "transferred" to the investors as is the profit.

Thus, the loss cannot reduce accordingly shareholders' taxable income from other sources (if any). It means preserved ability to pay, while in reality it is eroded. Hence, experts from PricewaterhouseCoopers believe that in Bulgaria "[t]here is no flow through treatment of the income of the BG-REIT for …tax purposes." (2015:12). Against the background of the flow-through REIT arrangement, the issue of neutral taxation regarding investors, transactions and modes of investment remains open for further analysis. The following table sketches briefly the taxes due upon the afore- mentioned dimensions.

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[11] The SPICs are obliged to regularly disclose any shareholders with more than 5% share in their capital.

[12] Concerning individuals' share in farmland SPICs, it should be noted that in two of them participate two financial holdings. As they both to more than 90% belong to two high net worth individuals (HNWI), we calculate separately their shares and those of the financial holdings.

Table 2. Tax variations across types of investors, transactions and modes of investment

Investor	Direct investment		Indirect investment	
	Transaction	Tax due	Transaction	Tax due
Individual (physical person)	Buys farmland	Local tax upon acquisition of land; VAT– optional if land is sold by a VAT registered person, who chose to apply the tax.	Buys farm land through shares in a SPIC	No local tax on acquisition of shares; No VAT applicable on the value of shares bought.
	Holds farmland	No recurrent tax on ownership, no waste charge; If Rental income occurs – no Personal income tax (PIT) due	Holds shares	No recurrent tax on ownership of shares or on underlying land; If income from SPIC occurs (rents, capital gains of lands disposition etc.) – dividend tax at 5%; No corporate income tax (CIT) for the SPIC.
	Sells farmland	Flat tax at 10% - depends upon length of time holding the land; no VAT since land is supplied by non-registered person	Sells shares	No exit tax; no capital gain tax if transaction took place on the regulated stock exchange; no VAT applicable.
Institution (corporation)	Buys farmland	Local tax on acquisition of land; VAT - if land is sold by a VAT registered person, who chose to apply it.	Buys farmland through shares in a SPIC	No acquisition tax neither on shares, nor on the land underlying them; No VAT applicable on the value of shares.
	Holds farmland	No recurrent tax on ownership, no waste charge; if rents accrue –10% corporate income tax (CIT)	Holds shares	No recurrent tax on holding shares and land through them; If the SPIC distributes annual income – no CIT at SPIC's level; 10% CIT on dividends if the beneficiary is a corporation.
	Sells farmland	In case of a capital gain - at 10% CIT;	Sells shares	In case of capital gain - no CIT for the corporation, if capital loss – CIT at 10%.

Source: Based on: The Act of Corporate Income Taxation, The Act on the Income Taxes for Physical Persons, The Act on Local Taxes and Charges, The Act on Value Added Tax

In Table 2 above, two modes of investment are considered – direct ownership of agricultural land and indirect one through shares in a SPIC. The subjects of both modes are individual and institutional investors. Further, it is differentiated between three types of transactions – buying, holding and selling the underlying asset. The comparative analysis is not restricted to the income taxes but integrates all possible levies.

Wealth taxation varies across transactions and modes of investment. Wealth taxes affect property acquisition, while recurrent levies on holding agricultural land, respectively shares

thereon, are non-applicable. Direct investment is more tax-burdened than the indirect one. No imposition is due on the gross/net assets value.

VAT is optional for farmland transactions in Bulgaria. It applies if they occur between registered persons so that the latter are allowed a VAT refund on the inputs bought. VAT is not imposed on transactions with REIT's securities.

Much differentiated (and complicated) is the income tax treatment. Assuming the individual acquires land which generates income (Table 2), i.e. rents, it turns out that it is better to invest directly since no personal tax on any income from land is due. The same provision is valid for foreigners, which receive rents from directly holding agricultural land (The Act on Income Taxes for Physical Persons, Art. 13, Para 1, point 4).

If this asset is sold out within five years after its acquisition's date, from the PIT's "point of view" it is better to do it through the SPIC. Then, the possible capital gain will be taxed at 5% upon dividends distribution to the individual investors (domestic and non-domestic). If they directly sell the land within a 5-years' term, any capital gain of the same amount will be taxed at 10% flat tax. Any capital gain from REIT's shares disposed by physical persons at a regulated stock exchange is PIT-free. Any capital loss is irrelevant for tax purpose as it provides the individuals with no tax benefits.

Is the income taxation so complicated for corporate investors? If the company chooses to hold the land (Table 2), in terms of CIT, any return will be taxed at 10%, regardless of the mode of investment. The possible return will be integrated into other income and taxed accordingly at 10%. The only exception concerns non-domestic corporations, which determine their taxable profit, according to the respective home country corporate tax legislation. Thus, within the transparent REIT setting, tax neutrality in terms of mode of investment is achieved only for domestic corporations.

Once the corporate investor sells the farm land (Table 2), any capital gain will be aggregated with the rest of its income and taxed at 10% corporation tax. The same occurs if the SPIC sells land with a capital gain. The latter will be considered for computing the amount of dividends for the investors. The corporate ones owe 10% tax on the dividends received from the SPIC. If the corporation sells out its shares in the SPIC on a recognized stock exchange, the income tax liability depends on the outcome. If it is a gain, then there will be a CIT saving. If there is a capital loss, there will be an additional CIT due.

In terms of different taxes different patterns of non-neutrality emerge. The wealth taxation still differentiates across transactions and modes of investment in farmland. Although a universal indirect tax, VAT is optional in agricultural land transactions. The most divergent remain income levies. Despite some progress, there is still much tax non- uniformity to overcome across types of investors, transactions and modes of investment in agricultural land.

5. Conclusion

For 15 years, Bulgaria has been gathering synergy and unique expertise from the markets of real estates and financial instruments. Farmland BG-REITs show a sustainable pattern of dividend distribution to shareholders throughout the period 2009-2017.

The tax transparent arrangements made their way in Bulgaria through SPICs. This arrangement promotes the integrationist view, lightening the tax burden on corporate income. The latter favors especially the individual investors, which hold the biggest share in the equity capital of the farmland BG-REITs. In terms of encouragement the tax policy has favored their development within the period of consideration. Though, relevant differences should be

removed across investors, transactions and modes of farmland acquisition, which point to a still scarce income tax neutrality.

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E-CRM DIMENSIONS AND PERCEIVED INNOVATIVENESS OF BANK'S SERVICES

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Abstract

Research on electronic customer relationship management and innovation has increased in recent years. The study proposes a model based on specific dimensions of e-CRM, i.e. customers' satisfaction with bank's website, the level of personalization of services, trust in a bank, and the integration of online and physical services and their impact on innovativeness in from a customer perspective. Based on a survey of 214 respondents in B&H, this study applies the structural equation modeling (SEM) to investigate the research model. The results show that two e-CRM factors (personalization and channel integration) significantly influence perceived innovativeness. The paper provides useful information on the relationship between specific e-CRM dimensions and perceived innovativeness.

Keywords: electronic CRM, perceived innovativeness, website satisfaction, personalization, trust, channel integration

JEL classification: M15

1. Introduction

With advancements in information technology, drastic changes in service industries have been created over the past decades. Knowing that customer satisfaction is one of the main goals of companies, the survival of companies depends on maintaining a more stable long-term relationship with its customers (Dalir *et al.*, 2017). This is why the literature recognizes the need for companies to provide better customer service.

With the increasing presence of the Internet and information technologies in all aspects of business, the segment of communication with customers has undergone certain changes. More and more customer service activities are taking place online. In other words, companies invest in customer relationship management, and more recently in electronic means that ease this relationship. Successful CRM is one of the main competitive advantages that companies can use to achieve customer loyalty and prevent consumers from switching to other companies (Kimiloğlu and Zarali, 2009). The main goal of CRM can be seen as understanding and better treating customers for increased loyalty and profit. CRM is an integrated approach to customer

relationship through a combination of three important components: people; process; and technology (Kimiloğlu and Zarali, 2009; Harrigan and Miles, 2014). When using the Internet as a domain for the implementation of CRM, we are talking about electronic CRM or e-CRM (Kimiloğlu and Zarali, 2009).

For the contemporary companies, perceived innovativeness is considered a key competitive weapon for firms when forging corporate reputations (O'Cass and Carlson, 2012). Innovation, in general, is considered as a key companies' capability in the digital era. O'Cass and Carlson (2012) noted that brands that are perceived as being innovative in the minds of consumers have been found to have a positive impact on firm credibility.

The main goal of this paper is to analyze the relationship between certain elements of e-CRM and the perceived innovativeness of the company's services by its customers. In this regard, we have selected the following aspects of CRM for analysis: i) website satisfaction, ii) personalization, iii) trust and iv) channel integration, and we will analyze the impact of these constructs on the customers' perceived innovativeness of the company. The hypotheses will be tested for users of banking services. In other words, the purpose of this study is to examine to what extent the customers' satisfaction with bank's website, the level of personalization of services, trust in a bank, and the integration of online and physical services influence innovativeness in from a customer perspective.

2. Literature review

2.1. e-CRM

Many companies apply e-CRM in their business, resulting in increased customer loyalty and customer retention (Lee-Kelley, Gilbert and Mannicom, 2003). The Internet becomes more and more important for business, which provides companies with direct and effective ways of communicating with clients and enables direct communication with customers and reduction of costs as a result of savings in time and space. e-CRM is a term designed to manage customer relationships that are delivered online (Feinberg and Kadam, 2002). This relates to online marketing activities, instruments, and techniques that are focused on building and improving customer relationships (Lee-Kelley, Gilbert and Mannicom, 2003). e-CRM implies improving customer service and retaining valuable customers and clients (Fjermestad and Romano, 2003).

Technology plays an important role in improving services by providing new forms of services and delivery, then strengthening the customer's sense of belonging, responding more quickly to customer needs (Mulligan and Gordon, 2002). e-CRM implies the improvement of the basic CRM concept and the application of existing techniques to identify the customer's value and to manage customer service in an electronic environment.

2.2. Perceived innovativeness

Perceived innovativeness in this research addresses marketing and consumer-related aspects of innovation (Anselmsson and Johansson, 2009). The development of new products and services is of great importance for the growth and survival of companies. Perceived innovation involves the way customers perceive the level of innovation of some company which is subject to a certain degree of subjectivity (Anselmsson and Johansson, 2009). By following the attitudes, habits, and needs of the customers, the company comes up with various

innovative ideas to improve its products by adapting them to the needs of the target market. The customer is an important factor influencing innovation and customers play a very important role in the development of innovations, because their very sophisticated tastes, desires, and needs force companies to continually create new or change and improve existing products and services (O'Cass and Carlson, 2012).

3. Theory and hypotheses development

Companies increasingly treat their customers differently using personalized offers, as part of their e-CRM schemes. Focusing on the needs of customers with differentiated offers can result in the more efficient use of organizational resources and increased value for both the customer and the company (Yu *et al.*, 2015). To be competitive means to be innovative and different from competitors. Creating satisfied and loyal clients is the most important and at the same time very difficult task of a market-oriented company. Client-oriented operations of banks are in the function of creating customers' satisfaction through meeting their needs and desires, with the aim of achieving a competitive advantage and therefore a profit. In order to achieve this, companies use different CRM activities. Kim *et al. (*2011) analyzed the relationship between CRM and company innovation suggesting that CRM technology should help the company understand its customers. Improved two-way communication through CRM technology can facilitate the exchange of ideas generated by customers, which leads to improved solutions for their needs. This improves the innovation of the company. In other words, the company through CRM has the ability to discover the needs of its customers, and therefore to respond better to those needs. On the other hand, through communication with customers, the company has the opportunity to make its customers familiar with its innovation, thus influencing the perceived innovation. Thus, we propose the following hypotheses:

H1. Satisfaction with the website is positively related with perceived innovativeness.
H2. Personalization level is positively related with perceived innovativeness.
H3. Trust is positively related with perceived innovativeness.
H4. Channel integration is positively related with perceived innovativeness.

4. Research methodology

A survey questionnaire was used for the purpose of this research. In the development of the questionnaire, questions from the following studies were used: Ab Hamid, Cheng and Akhir (2011) for observed e-CRM dimensions, and Falkenreck and Wagner (2011) for innovativeness.

4.1. Sample

A total of 256 respondents took part in the research. Following Hair *et al.*, (2014), observations containing more than 20% of the missing data were removed from the sample, so 214 observations made a suitable sample of this study, of which 50.9% were women and 47.7% were men. The largest part of the sample consisted of faculty-educated respondents (50.5%), ages 25-34 (50.5%), which is shown in Table 1. The target population was

inhabitants of Bosnia and Herzegovina above 24 years of age. The convenient sampling and snowball method of data collection are used (Berg, 1988).

Table 1. Sample characteristics

Respondents characteristics	Number	Percentage
I. Gender		
Female	109	50.9
Male	102	47.7
n/a	3	1.4
II. Education		
SSS	52	24.3
VSS	108	50.5
Master	46	21.5
PhD	4	1.9
n/a	4	1.9
III. Age		
below 25	36	16.8
from 25 to 34	104	48.6
from 35 to 44	31	14.5
from 45 to 54	29	13.6
from 55 to 64	10	4.7
Over 64	1	0.5
n/a	3	1.4

4.2. Research instrument

As already mentioned, the items are adapted from Ab Hamid, Cheng and Akhir (2011) and Falkenreck and Wagner (2011) for innovativeness. All dimensions are first order reflective constructs.

Table 2. CFA results

Construct/Item	Standard. factor loading	t-value
I. Website satisfaction		
My bank allows me to get information easily with a few clicks on its website.	0.911	-
On the bank's website, the links are clearly indicated.	0.868	18.580
I am satisfied with the content and what my bank's website offers.	0.874	18.859
II. Personalization level		
My bank keeps a database of my transactions with them.	0.729	-
I receive online advertisements that match my interests.	0.685	9.536
Products/services can be custom-made based on my specification.	0.804	11.175
I receive a personalized email from the bank on products.	0.828	11.490
III. Trust		
My bank has clearly defined terms of privacy.	0.827	-
My bank's customer support department is reliable.	0.915	17.022
My bank applies high-security standards for all my transactional data.	0.928	17.361
IV. *Channel integration*		
The bank allows me that services for which I submit online requests can easily be used at the nearest branch office.	0.929	-
The bank allows me to cancel the products for which I have decided electronically in the nearest office.	0.808	13.763
V. Perceived innovativeness		

My bank is leading the market in terms of its services.	0.874	-
My bank constantly changes and improves the services it offers.	0.925	19.561
My bank's credit services are innovative.	0.860	17.011
My bank's online services are innovative.	0.868	17.322

5. Data analysis and research findings

Data collected by the questionnaire survey were analyzed in several steps. First, a confirmatory factor analysis (CFA) was used to verify the reliability and validity of the measurement models. Finally, the structural equation modeling (SEM) is used for hypotheses testing. We used following indices for model fit: $\chi2$, root-mean-square-error (RMSEA), normed-fit index (NFI), and comparative-fit index (CFI) (Hair *et al.*, 2014).

Table 3. CR, AVE and α values for measurement models

Dimensions	*CR*	*AVE*	*α*
Website (WS)	0.915	0.782	0.914
Personalization level (PL)	0.848	0.583	0.838
Trust (TR)	0.920	0.794	0.918
Channel integration (CI)	0.862	0.758	0.857
Perceived innovativeness (PI)	0.933	0.778	0.932

Table 2 presents the results of CFA. As shown, all indicators loaded high (>0.5) on their respective constructs. Also, the fit indices of the measurement model were all within the normally specified thresholds. Composite reliability (CR), as shown in Table 3 for each construct was greater than 0.7, and the average variance extracted (AVE) for each construct was above 0.5. First of all, Crombach's alpha test for reliability ranges from 0.857 to 0.932, which is way above the threshold value recommended by Hair et al. (2014). The Cronbach alpha values were greater than the correlations between the respective constructs and other latent constructs (Hair *et al.*, 2010). These results provide evidence of reliability, convergent validity, and discriminant validity of the measures.

5.1. Model fit and hypotheses testing

This paper performs structural equation modeling (SEM) to test the hypotheses, using Lisrel 8.8 and maximum likelihood estimation techniques to test the model. First, the results presented in Table 4 show that the model can be accepted. As shown in Table 5, the results provide strong support for H2 and H4 as indicated by the significant positive coefficients of *personalization* on *perceived innovativeness* ($\beta=0.605$, $p<0.01$) and *channel integration* on *perceived innovativeness* ($\beta=0.316$, $p<0.01$). This suggests that higher customer's satisfaction with the personalization of the bank's services leads to greater perceived innovativeness. In the same way, higher customer's satisfaction with the integration of online and physical services leads to greater perceived innovativeness.

Table 4. Model fit

Estimate	Model estimated	Explanation
Chi-square	269.893	
df	94	
χ2/df	2.87	Very good, close to 2, <5
RMSEA	0.0937	<0,05 good fit; <0,08 acceptable fit; <0,1 mediocre fit
SRMR	0.0430	Very good, <0,08
NFI	0.967	Very good, >0,95
CFI	0.978	Very good, >0,90

Table 5. SEM results

	Dependent variable	Independent variable	Path coefficient	t − value	p-value
	Model				
H1	Perceived	← Website satisfaction	0.024	0.214	0.831
H2	Perceived	← Personalization	0.605	5.220	0.000
H3	Perceived	← Trust	-0.039	-0.428	0.669
H4	Perceived	← Channel integration	0.316	3.224	0.002

However, satisfaction with the bank's website and trust were not found to have a significant effect on perceived innovativeness, and H1 and H3 were not supported.

6. Conclusion, limitations and recommendations

This study sheds light on the relationship between e-CRM and perceived innovativeness from the customer perspective, with a special focus on the role of website satisfaction, personalization, trust, and channel integration. The results revealed that personalization of services has a positive impact on customers perception of the bank's innovativeness. Regarding the integration of physical and online services, the results revealed that the integration of channels has a positive influence on customers perception of the bank's innovativeness. Interestingly, the effects of trust and website satisfaction seem to be non-significant. These findings depart from existing studies stressing the benefits of the overall dimension of e-CRM for customers perception of the company.

Our study provides empirical evidence of the relationship between personalization and channel integration as dimensions of e-CRM and customers perceived innovativeness. Companies can use the results to build and enhance dimensions of their e-CRM relevant to customers in order to meet customers' satisfaction. The growing importance and impact of CRM in today's business environment have created significant interest in industry and academia around the world. The major contribution of this study is that it provides researchers and practitioners with additional insights into the relationship between specific e-CRM dimensions and perceived innovativeness from the customer's perspective.

The study has a few limitations. First, it should be replicated in other contexts. Second, measurement models of e-CRM dimensions are adopted and adapted from previous research. In this regard, the confirmation of measurement constructs is required. Future research should

explore alternative approaches to conceptualizing e-CRM. Finally, sampling was not random, but convenient what has to be taken into account when generalizing the findings of the study.

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A REVIEW OF FISCAL INCENTIVES FOR RENEWABLE ENERGY IN EUROPEAN UNION MEMBER STATES

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Abstract

In the past few years, changes in renewable energy markets, investments, industries and policies have been very rapid. The potential of renewable energy resources is enormous since they account for approximately 15 to 20 percent of the world's total energy supply. The objectives of using renewable energy include reduction of CO_2 emissions, protection of the environment, improvement in human health and the quality of the physical environment, the creation of a sustainable supply chain for improved and clean energy technologies and its contributions to the environmental aspects of sustainability. The main objective of this paper is to give an overview of current fiscal incentives for renewable energy, as well as the advantages and disadvantages of renewable energy sources. We also conducted a linear regression analysis to investigate the relationship between the primary production of renewable energy and gross domestic product per capita at market prices in European Union member states in the 2006-2015 period. Based upon this analysis, we conclude that there is a positive statistical relationship between the primary production of renewable energy and gross domestic product per capita at market prices in European Union member states in the 2006-2015 period. The average share of renewable energy in gross final energy consumption in European Union member states in the 2006-2015 period was 13.2 percent. By observing renewable energy finance flows we found that the United Kingdom, Belgium and Germany had very high investments in renewable energy in the 2014-2016 period. Using a comparative analysis and an empirical approach, our contribution consists of analyzing and presenting fiscal incentives for renewable energy in the European Union member states where they are the most used, in order to achieve renewable energy development.

1. Introduction

While raising awareness of climate change and the ways in which environment can be harmed, most countries are trying to find alternative ways of energy consumption. One alternative is renewable energy. This type of energy and its implementation does not cause human health issues and contributes to creating a friendlier environment. While emphasizing the importance of renewable energy in the production and consumption of energy, the European Union stimulates its member states to apply different financial and fiscal incentives. Financial and fiscal instruments for supporting investments in renewable energy include capital subsidies or grants; investment or production tax credits; reduction in sales, energy, CO_2, value added tax or other taxes; energy production payment and public investments, loans or grants. Renewable energy produces little to no waste and allows for limited use of fossil fuels in the future. The various types of renewable energy sources comprise solar energy, wind energy, hydropower, energy produced from biomass, geothermal energy and ocean energy. Every member state is responsible for achieving a certain level of renewable energy consumption in compliance with their laws, regulations and directives. Great potential also lies in local and regional development incentives. Gan and Smith (2011) explored key factors that may have brought about the differences among OECD countries in renewable energy shares in the total primary energy supply. By applying a panel data model, they found that only market deployment policies and gross domestic product (GDP) per capita had a statistically significant effect on the supply of renewable energy. Johnstone, Hascic and Popp (2010) examined the effects of public policies on innovation in the renewable energy sector in a cross-section of OECD countries over the period 1978-2003. They found that public policy plays a significant role in determining patent applications. Menz and Vachon (2006) and Carley (2009) studied renewable investment in the USA by applying the panel regression method. Moreover, authors (Koengkan, 2017; Curtin et al. 2017; Servert et al. 2014; Smith and Urpelainen, 2014) investigated the impact of fiscal incentive policies on the installed capacity of renewable energy.

The main objective of this paper is to give an overview of current fiscal incentives for renewable energy, as well as the advantages and disadvantages of renewable energy sources. We also conducted a regression analysis between the primary production of renewable energy and gross domestic product per capita at market prices in European Union member states in the 2006-2015 period. Using a comparative analysis and an empirical approach, our contribution consists of analyzing and presenting the most frequently applied fiscal incentives for renewable energy in EU-28, trend of renewable energy finance flows in the 2014-2016 period as well as causal relationship with gross domestic product per capita. The paper is structured as follows. After the introduction, Section 2 describes the importance and the characteristics of renewable energy and provides a comparative analysis of fiscal incentives related to renewable energy. The causal relationship between the primary production of renewable energy and gross domestic product is presented in Section 3. Finally, the last Section provides an overview and a conclusion.

2. The Importance and the Characteristics of Renewable Energy

Renewable energy sources in today's world represent a huge potential for responsible use of energy in the future. According to Directive 2001/77/EC and Directive 2009/28/EC, the European Union legislation identifies the following renewable energy sources: wind, solar, geothermal, wave, tidal, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases. The development of this type of energy is important for several reasons such as decreasing CO_2 emissions in the atmosphere, increasing the share of renewable energy

consumption to achieve energy sustainability, maintaining a safer energy supply in order to reduce electric power consumption and the import of raw energy materials, and making the share of renewable energy on the market more cost-effective and competitive in the long run. To increase investment in renewable energy and to achieve renewable energy development goals, policymakers need to improve investment conditions across all European Union markets. The following steps should be taken to achieve this:

- Designing coherent and targeted investment incentives such as feed-in tariffs, renewable certificates and public tenders;
- Making the renewable energy investment environment more attractive and business-friendly (especially solar and wind energy sectors); and
- Ensuring that the broader investment environment does not work against climate change mitigation actions.

A study conducted by the International Energy Agency (2006) lists three generations of renewable energy technologies:

- First-generation technologies which have already reached maturity, such as hydropower, biomass combustion, and geothermal energy;
- Second-generation technologies which are undergoing rapid development such as solar energy, wind power, and modern forms of bio-energy; and
- Third-generation technologies which are presently in developmental stages such as concentrating solar power, ocean energy, improved geothermal, and integrated bio-energy systems.

All three generations of renewable energy technologies are not equally developed. The future of first-generation technologies depends on exploiting remaining resources, and overcoming challenges related to the environment and social acceptance. Support of research, development and demonstration is very important for second-generation technologies, especially their commercial viability. Third-generation technologies are on the horizon but still depend on attracting sufficient attention and research, development and demonstration funding. While renewable energy sources are abundant, they also have both advantages and disadvantages. Table 1 displays the main advantages and disadvantages of renewable energy sources.

Table 1. Advantages and Disadvantages of Renewable Energy Sources

ADVANTAGES	DISADVANTAGES
Reducing dependence on conventional energy sources such as oil, natural gas, coal etc.	Very high capital cost of conversion equipment for renewable energy such as solar, wind and tide energy
Inexhaustible sources of energy (sun, wind, rivers, organic matter etc.)	Solar power is dependent on sunlight availability
Low operating costs which are not influenced by fluctuations on international markets	Wind and solar energy generation facilities need to be spread out on large surfaces
Significant new job creation	Wind and tidal power generation facilities can only be located in places with suitable wind and tidal conditions
Maintaining natural resources in the long term	Susceptibility to political manipulation
Creating the most ecologically sound solution for efficient reduction of carbon dioxide emissions and combating the greenhouse effect	Difficult to access for many people and companies

Source: Authors' systematization.

Based on Table 1, we can conclude that despite certain disadvantages, there is great need for economic and policy mechanisms which would support sustainable markets for renewable energy systems in the European Union. Akella, Saini and Sharma (2009) found that the social benefits of renewable energy systems include improved health, broader consumer choice, greater self-reliance, improved work opportunities and technological advances. On the other side, Painuly (2001) found that market imperfections and various economic, financial, institutional, technical, social, cultural, behavioral and other distortions form the main hindrances to renewable energy development.

The share of renewable sources in gross final consumption of energy increased in 15 of the 28 member states in 2015. The main goal of the Europe 2020 strategy is making sure that energy obtained from renewable sources comprises 20% of the gross final consumption of energy by 2020, and at least 27% by 2030. The average share of energy from renewable sources in 28 European Union member states in the 2004-2016 period is summarized in Figure 1.

Figure 1. The Average Share of Energy from Renewable Sources in EU-28 Member States
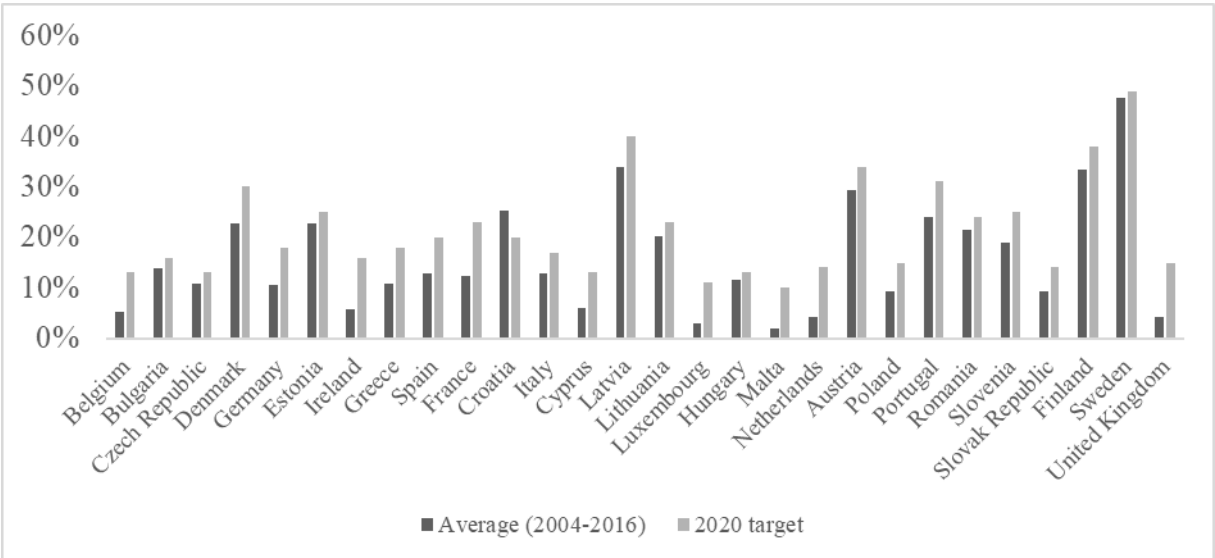
Source: Author's calculation based on Eurostat data on renewable energy.

Figure 1 shows that the highest average shares of energy from renewable sources in EU-28 member states were recorded in Sweden (48%), Latvia (34%), Finland (33%) and Croatia (25%), while the lowest are in Malta (2%), Luxembourg (3%), the United Kingdom and Netherlands (4%). Eleven EU-28 member states have already reached the level required to meet their national 2020 targets. These are Bulgaria, the Czech Republic, Denmark, Estonia, Croatia, Italy, Lithuania, Hungary, Romania, Finland and Sweden.

Figure 2 displays asset finance investment in renewable energy in 2014-2016 ($ BN).

Figure 2. Asset Finance Investment in Renewable Energy in 2014-2016 ($ BN)
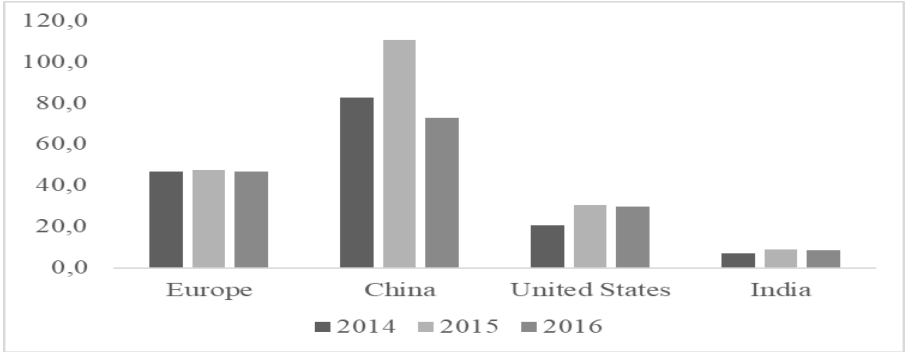
Source: Global Trends in Renewable Energy Investment, 2017.

Based on Figure 2, we conclude that asset finance investment decreased in 2016 in all regions. Several reasons account for this. The most important ones are lower dollar-denominated costs, inappropriate timing and slowdown in activity caused by dollar-denominated costs which affected some key markets such as the Chinese one. Besides global trends in renewable energy investments, we also analyzed the trend in renewable energy finance flows which covers investments linked to renewable energy project assets in USD million for the 2014-2016 period (Figure 3).

Figure 3. Trend in Renewable Energy Finance Flows in USD million in the 2014-2016 Period
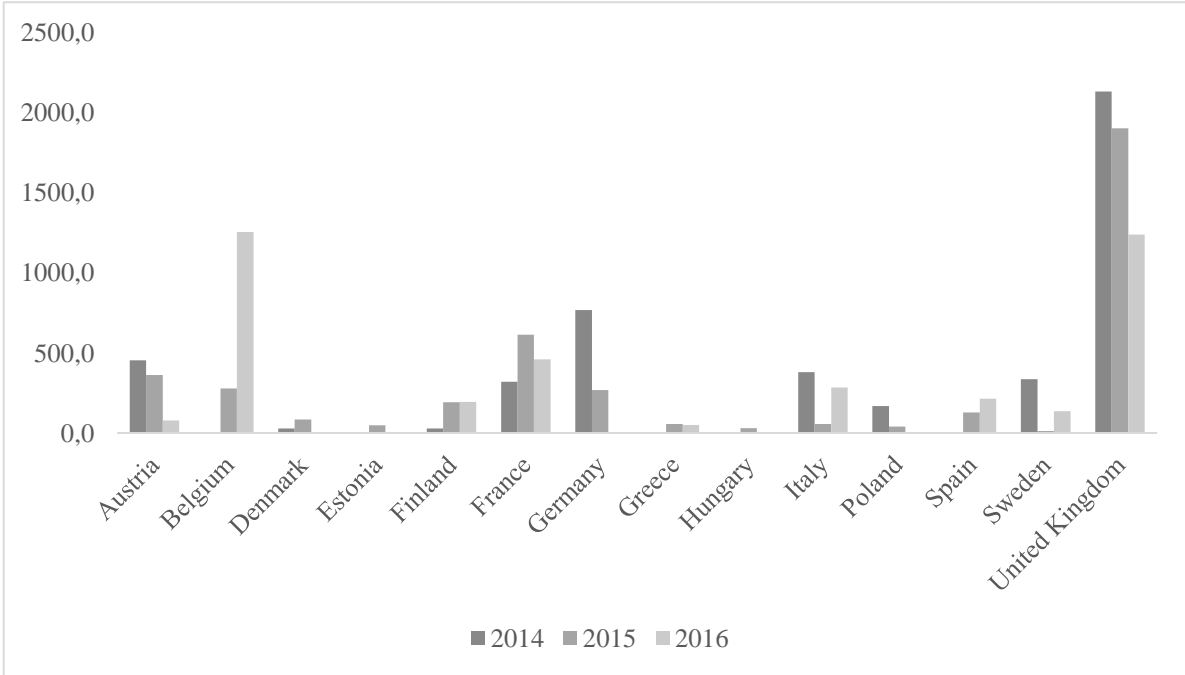
Source: IRENA (2018), Renewable Energy Statistics.

From the data in Figure 3, we can conclude that the most significant trend in renewable energy finance investment among European Union member states was recorded in the United

Kingdom, Belgium and Germany. Due to lack of data, we included only following member states.

Many financial institutions in the European Union provide financial support for renewable energy sources. Among these are the International Finance Corporation, International Bank for Reconstruction and Development, International Development Association, European Investment Bank, European Central Bank and others. For example, the European Investment Bank invested between 0.5 (2006) and 2.8 (2009) billions of EUR in renewable energy sources. Renewable energy projects in the European Union financed by the European Investment Bank in the 2010-2017 period are presented in Table 2.

Table 2. Renewable Energy Projects in the European Union Financed by the European Investment Bank in the 2010-2017 Period

Project name	Region	Country	Sector	Year	Amount (EUR)
EOLICAS DE PORTUGAL SFF I	EU	Portugal	Energy	2010	8,691,551.45
ENERGY EFFIC & RENEWABLES BARCELONA	EU	Spain	Energy	2010	125,000,000.00
SE POWER PLANT AND FOREST INDUSTRY R&D	EU	Poland	Energy	2010	18,369,000.00
SAPEI HIGH VOLTAGE CABLE LINK	EU	Italy	Energy	2010	73,000,000.00
CEZ PHOTOVOLTAIC POWER INVESTMENTS	EU	Czech Republic	Energy	2011	80,000,000.00
TOUL CCGT POWER PLANT	EU	France	Energy	2011	165,000,000.00
ZELIOS - PV PLANTS - FRANCE ITALY	EU	Italy	Energy	2011	50,000,000.00
ENBW WPD OFFSHORE WIND - BALTIC I	EU	Germany	Energy	2011	80,000,000.00
IMWIND WIND POWER	EU	Austria	Energy	2012	35,000,000.00
INELFE INTERCONNEXION FRANCE - ESPAGNE	EU	France	Energy	2012	75,000,000.00
TOSCANA ENERGIA GAS & SOLAR	EU	Italy	Energy	2012	70,000,000.00
SHE TRANSMISSION UPGRADE - RENEWABLES	EU	United Kingdom	Energy	2013	173,812,282.73
WWU 2013-16 GAS DISTRIBUTION	EU	United Kingdom	Energy	2014	201,181,943.92
NORTHERN GAS NETWORKS 2014-17 (RIIO-1 PHASE I)	EU	United Kingdom	Energy	2015	202,675,314.15
BEATRICE OFFSHORE	EU	United Kingdom	Energy	2016	389,569,914.81
NORDLINK HVDC PROJECT	EU	Germany	Energy	2017	350,000,000.00
TOTAL					63,384,468,436.78

Source: European Investment Bank, http://www.eib.europa.eu/projects/loan/list/

Table 2 indicates that the European Investment Bank invests a large amount of EUR to support renewable energy development in all European Union member states. All of this is also connected with the 2030 framework for climate and energy projects, whose main goals are 40% cuts in greenhouse gas emissions (from 1990 levels), at least 27% share for renewable energy and 27% improvement in energy efficiency.

2.1. Fiscal Incentives for Renewable Energy

Since the early 1990s most European countries have initiated their own programs for the support of alternative energy. Cansino et al. (2010) explored the main tax incentives used in the EU-27 member states to promote green electricity. They found that six member states (Germany, Romania, Slovak Republic, Denmark, Sweden and Poland) included an exemption on payments of excise duties for electricity generated from renewable energy sources. In addition, they had different types of fiscal incentives to support renewable energy development such as capital subsidies or grants, investment or production tax credits, reductions in sales, energy, CO_2, value added tax (VAT) or other taxes, energy production payment, public investment, loans, or grants. A comparative analysis of fiscal incentives for renewable energy is presented in Table 3.

Table 3. A Comparative Analysis of Fiscal Incentives for Renewable Energy in 2015

	Capital subsidy, grant	Investment or production tax credits	Reductions in sales, energy, CO_2, VAT or other taxes	Public investment, loans or grants
Austria	x	x	-	x
Belgium	x	x	x	-
Bulgaria	-	-	-	x
Czech Republic	x	x	x	x
Denmark	x	x	x	x
Germany	x	x	x	x
Estonia	-	-	-	x
Ireland	-	-	-	-
Greece	x	x	x	x
Finland	x	-	x	-
France	x	x	x	x
Croatia	-	-	-	-
Italy	x	-	x	x
Cyprus	x	-	-	-
Latvia	-	-	x	-
Lithuania	-	-	-	x
Luxembourg	x	-	-	-
Hungary	x	-	x	-
Malta	x	-	x	-
Netherlands	x	x	x	x
Poland	-	-	x	-
Portugal	x	x	x	x
Romania	-	-	-	x
Spain	x	x	-	-
Slovenia	x	x	x	x
Slovak Republic	-	-	x	-
Sweden	x	x	x	x
United Kingdom	x	-	x	x

Note: x – existing, - non existing; *Source:* Authors' systematization.

Table 3 shows that the countries with the highest number of fiscal incentives are the Czech Republic, Denmark, Germany, Greece, France, Netherlands, Portugal, Slovenia and Sweden. Ireland and Croatia are the only ones that do not provide any type of fiscal incentives for renewable energy.

Ogunlana and Goryunova (2016) found that different measures of tax systems to stimulate investment in alternative energy are also intended to achieve the effect of stimulating high-risk investment in energy facilities with a long payback period. Moreover, Curtin et al. (2017) examined the impact of technology-specific economic and financial incentives for the promotion of higher level investment in low-carbon technologies from local citizen investors. They found that "feed-in tariffs, grants and tax incentives can be successful in mobilising greater levels of investment from local citizen investors, but soft loans tend to be less effective as a stand-alone instrument" (2017: 534).

3. Relationship between the Primary Production of Renewable Energy and Gross Domestic Product in European Union Member States

In order to obtain meaningful results, we used annual Eurostat datasets for the EU-28 member states for the 2006-2015 period. By applying the linear regression method, we investigated the causal relationship between the primary production of renewable energy and gross domestic product per capita at market prices in European Union member states in the 2006-2015 period. The primary production of renewable energy shows how much renewable energy was produced from biomass, hydropower, geothermal energy, wind and solar energy in the EU-28 member states in total for the 2006-2015 period, while the gross domestic product (GDP) at market prices is the final result of the production activity of resident producer units. It is defined as the value of all goods and services produced minus the value of any goods or services used in their creation.

Our assumption is that by increasing production of renewable energy via fiscal incentives, gross domestic product, as an indicator of economic growth, will also increase. Since we cannot quantify fiscal incentives by number and each country's national legislation prescribes their own incentives, we used publicly available data, such as primary production of renewable energy as evidence of the application of this type of fiscal incentives. Our assumption is that those member states which offer more fiscal incentives for renewable energy will be characterized by greater primary production of renewable energy and that this will cause economic growth, measured by gross domestic product.

Figure 4 presents the results of the significant positive relationship between the primary production of renewable energy and gross domestic product per capita at market prices in EU-28 in the 2006-2015 period.

Figure 4. Causal Relationship between the Primary Production of Renewable Energy and Gross Domestic Product per Capita at Market Prices in EU-28 in the 2006-2015 Period
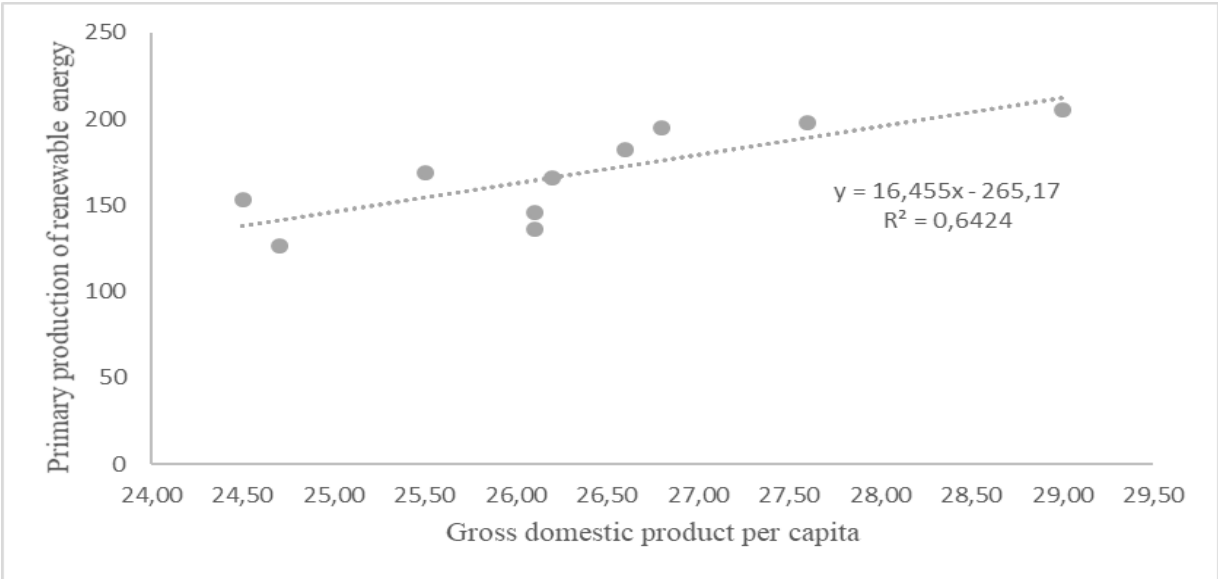
Source: Authors' calculation.

The results of the linear regression between the two variables mentioned above shows a positive significant relationship. In addition, the coefficient of determination is 0.64, which is high, as is the Pearson correlation coefficient (0.80). A positive relationship means that as one variable increases so does the other, that is, as one variables decreases so does the other. The empirical value of t-Stat is 3.79, while the P-value is 0.0053. Similarly, Gan and Smith (2011) found that renewable energy and bioenergy market deployment policies and GDP had significant effects on the per capita supply of renewable energy and bioenergy in OECD countries. However, the average share of renewable energy in gross final energy consumption in the European Union member states in the 2006-2015 period was 13.2 percent. Since then, the European Union made satisfactory progress so far, meeting the 20 percent target at the aggregate level, but many member states have yet to make additional efforts to achieve their individual targets.

Conclusion

Renewable energy sources represent an important alternative to conventional energy in today's world. However, the financing and costs of their use are much higher. Therefore, European Union member states use different financial and fiscal incentives to support investment in this type of energy. Countries with the highest number of fiscal incentives are the Czech Republic, Denmark, Germany, Greece, France, Netherlands, Portugal, Slovenia and Sweden (Table 3). One of the objectives of European Union member states is to became leaders in promoting and providing renewable technology and renewable energy sources. Therefore, all member states have included some forms of support and incentives in their legislation, mainly financial support for projects involved in renewable energy. Governmental and international financial institutions also have an important role. The European Investment Bank invested approximately 63.4 billion EUR in various renewable energy projects in the 2010-2017 period.

The global perspective shows that the number of financed renewable energy projects is constantly increasing, especially in China. European Union member states have different directives, laws and regulations connected with investment support in renewable energy. The European Union's basic energy efficiency goals are presented in the Energy Roadmap 2050 study. One of these goals is to reduce CO_2 emissions by 80% till 2050. Therefore, Hodzic and Arnautovic (2017) consider that the main impact factors for achieving this level of CO_2 emission reduction include technological development, technical solutions for nuclear energy, fossil fuel energy, renewable energy, transport, and information and communication technology.

Our empirical analysis showed that the causal relationship between the primary production of renewable energy and gross domestic product per capita at market prices in EU-28 in the 2006-2015 period is positive and statistically significant. In addition, the Pearson correlation coefficient showed a high positive value (0.80). This analysis demonstrates that European Union member states using fiscal incentives will produce more renewable energy, which will stimulate economic growth in corresponding ways. On the other hand, due to lack of data and difficulties in quantifying fiscal incentives by number, we were unable to conduct a more detailed analysis. These were the limits of our research. Recommendations for further research include conducting an empirical analysis comparing European Union member states by including a greater number of variables, for a longer time period by applying panel data analysis.

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HEALTH TOURISM IN THE EUROPEAN UNION: FINANCIAL EFFECTS AND FUTURE PROSPECTS

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Abstract

As a specific branch of tourism, health tourism has rapidly grown into a highly developed industry providing customers with medical, dental or surgical care while on holiday. All of the above requires tangible products, services and value, such as improvement in health, illness prevention and recovery after a serious affliction. Three forms of health tourism were identified based on a review of relevant literature: medical, wellness and spa, which can be further divided into the following parallel sections: illness-health-wellness and curative-preventative-promotive. In 2014, the European Union market witnessed an estimated 56.0 million of domestic arrivals and 5.1 million of international arrivals for the purpose of health tourism. The objective of this paper is to present the financial effects of health tourism revenues on the European Union market. In addition, we present the results of a SWOT analysis of health tourism in the European Union. Based on the data analyzed, we believe that governments should play a significant role in fostering sustainable development of this specific branch of tourism and attracting more health tourists from various countries worldwide. In order to achieve that, European Union member state governments should improve all types of infrastructure facilities, including road access, electricity and water supply along with air traffic, safety and accommodation. All of these objectives can be achieved through grants, subsidies and loans, not only from governments but from international financial institutions as well.
Keywords: health tourism, government, revenues, European Union, SWOT analysis

JEL classification: I11, H51, Z33

1. Introduction

Tourism, as one of the most dynamic and competitive industries, requires the very special ability to constantly adapt to customers' diverse and changing needs and desires. This naturally arises from the fact that the customer's experience, satisfaction as well as safety are the focus of the tourism industry. Customers enter the world's dynamic market with different motives for travelling. These include fun, work, sightseeing, active or leisure time and health.

Literature provides strong evidence of a long history of travelling for health and wellness. The famous Baths of Caracalla near Rome were once able to accommodate several thousand visitors and remained in use for three centuries (until the siege of Rome, 537 AD). Several well-known cold water bathing spots were used by Greek warriors for exercise purposes in the past (700 BC), while both steam and mud baths existed in Persia (600 – 300 BC). Today's health tourists enjoy various treatments 'inherited' from the past – for instance, Ayurvedic practices were used as early as 5000 BC, while Egyptian women in 3000 BC used many cosmetic products that still exist today. The history of health tourism in Europe has tended to be based around spas and seawater treatments, mainly owing to large numbers of thermal and mineral springs and a long coastline. The word spa is thought to have originated from Latin phrases such as sanitas per aqua ("health from water") or from the Walloon word espa for fountain (Smith and Puczkó, 2014).

Consequently, health tourism has long played a key role in the development of sustainable tourism, placing value on environmental quality, reducing seasonality, adjusting supply to specific customer demands, and financial growth of individual institutions providing health tourism services. The main objective of this paper is to present the financial effects of health tourism on the EU-28 tourism market. In addition, this paper aims to fill a gap in existing literature on health tourism in the European Union by presenting its main strengths, weaknesses, opportunities and threats via a SWOT analysis.

The paper is structured as follows. The introduction is followed by a brief review of the most relevant research in the field of health tourism. Section 3 will describe the concept of health tourism and its subsectors, while Section 4 will present the analysis of the financial effects of health tourism in the EU-28, together with its SWOT analysis. In Section 5, we deliberate on the future potential of health tourism in Europe, followed by final remarks in the conclusion.

2. Literature Review

Scientific literature contains a wealth of research on health tourism. Due to raising awareness of health tourism not only in Europe, but also abroad, different themes such as its history (Connell, 2011; Smith and Puczkó, 2009; Connell, 2011), economics (Connell, 2011; Morgan, 2015; Reisman, 2015) and destinations (Cheung, 2015; Cohen, 2008; Smith and Puczkó, 2009; White, 2009) have been thoroughly researched and discussed. Despite the broad scope of such literature, only a few researchers have investigated the financial effects and expenditure of health tourism (Johnson, Youngquist, Garman, Hohmann and Cieslak, 2015; Loh, 2014; Loh, 2015; Ridderstaat, Singh and DeMicco, 2018).

Authors (see Fetscherin and Stephano, 2016; Smith and Puczkó, 2014) agree that travelling in search of quality health services and well-being is not a new phenomenon. According to their research, in its early stages from the 18th to the 20th century, it was mostly wealthy patients from developing countries who travelled for the above reasons. This trend began to change in the late 20th century due to the globalization of communication and transportation technologies, resulting in less affluent people from developed countries increasingly travelling to developing countries for health tourism in the 21st century. According to Connell "in the past decade there is a significant attempt to achieve better health while on holiday, through relaxation, exercise or visits to spas, and it has been taken to a new level with the emergence of a new and distinct niche in the tourist industry (2006: 1093)."

Due to the growth of both health tourism in the world and the turnover of health and wellness services providers, more researchers (Müller and Kaufmann, 2001; Sekliuckiene and Langvinienė, 2009) have been focusing on the specifics of health tourism as a tourism business, its concepts and patterns, the impact of health tourism etc.

As Langvinienė (2014) states, more and more opportunities for the growth of specific tourism subsectors have emerged, especially wellness and healthcare. Due to this growing interest, several studies that can be seen as reviews or overviews of health tourism in one way or another have lately appeared. Carrera and Bridges tried to conceptualize health and medical tourism, saying that "the health tourism is organized travel outside one's local environment for the maintenance, enhancement or restoration of an individual's well-being in mind and body (2006: 449)." Ridderstaat et al. (2018) examined the impact of key inbound visitor markets on health tourism in the United States in the 1986–2016 period. By applying the microeconomic elasticity model, they found that overall health tourism spending is affected by long-term variations in several inbound visitor markets.

3. The Concept of Health Tourism

One of the pioneers of health tourism research, Goodrich (1993), states that the concept of health-care tourism was developed in the early 1980s. As such, its name changed from medical tourism to health-care tourism, and ultimately, health tourism. As the concept of health tourism was becoming more closely defined, more research followed in the United States and the United Kingdom. According to Goodrich and Goodrich, health tourism may be defined as "the deliberate attempt on the part of a tourist facility (e.g. hotels) or destination to attract tourists by promoting healthcare services and facilities in addition to regular tourism (1987: 217)."

In later years, as the concept of health tourism evolved, the World Tourism Organisation (WTO) included the following aspects into its definition: medical care, sickness and well-being, rehabilitation and recuperation. The WTO also states that there is no universal definition of health tourism, thereby encouraging every country to work out their development model according to their own definition. Based on Connell's research, "health tourism as a niche has emerged and has rapidly grown to become an industry where people travel long distances to other countries to obtain medical, dental and surgical care while simultaneously having a holiday. It has grown dramatically in recent years primarily because of the high costs of treatment in developed Western countries, long waiting lists, the relative affordability of international air travel, favourable economic exchange rates and the ageing of the often affluent post-war baby boom generation (2006: 27)."

The most common definition of health tourism nowadays is the one made by Smith and Puczkó which states that "it comprises those forms of tourism which are centrally focused on physical health, but which also improve mental and spiritual well-being and increase the capacity of individuals to satisfy their own needs and function better in their environment and society (2014: 206)." With this in mind, health tourism can be divided into three subsectors – medical, wellness and spa tourism. These three components are different, but also overlap.

According to Mainil, Eijgelaar, Klijs, Nawijn, and Peeters, "the three forms of health tourism reside on two parallel continuums: 'illness-health-wellness' and 'curative-preventative-promotive' (2017: 9)." Medical tourism involves people travelling for the sole purpose of undergoing medical treatments, interventions or therapies. In other words, curing illnesses is the core of the medical tourism subsector. On the other hand, wellness tourism

emphasises prevention and personal well-being. Spa tourism, with the aim of healing, relaxation or beautifying the body, is located in a sort of middle ground between health and wellness tourism. All of these subsectors can be preventative and/or curative in nature.

4. The Financial Effects of Health Tourism in the European Union

Given the persistent lack of a clear and unified definition of health tourism, researchers face significant difficulty when trying to obtain statistical data on health tourism. The following also presents an obstacle – national and local tourism statistics fail to accommodate health tourism and do not distinguish between different kinds of health tourism data. All of the above makes estimating growth and the financial effects of health tourism very complex.

Nonetheless, upon research conducted by the European Parliament's Committee on Transport and Tourism (TRAN) in 2014, Mainil et al. estimated that "the total size of the health-tourism market in the EU-28 was 56.0 million domestic arrivals and 5.1 million international arrivals (from all over the world), totalling 61.1 million health-tourism arrivals within the EU-28. The total health-tourism market (international plus domestic trips) comprises 4.3 percent of all EU-28 arrivals, 5.8 percent of domestic arrivals and 1.1 percent of international arrivals (2017: 26)."

In terms of overnight stays, according to Mainil et al. "health tourism in the European Union comprises 233.7 million guest nights for domestic trips and 16.7 million international trips, totaling at 250.4 million. The average domestic length-of-stay is 4.1 nights per trip, while for international travel this is 8.5. (2017: 27)." Table 1 shows the health tourism market estimate in the EU-28 in 2014.

Table 1. Health tourism market in the EU-28 in 2014

Country	Health tourism revenue (billion €)		Health tourism spending (billion €)
	Domestic arrivals	International arrivals	International departures spending
Austria	1.44	0.31	0.61
Belgium	0.07	0.04	0.23
Bulgaria	0.04	0.03	0.03
Croatia	0.09	0.08	0.06
Cyprus	0.03	0.03	0.04
Czech Republic	0.25	0.04	0.34
Denmark	0.15	0.03	0.13
Estonia	0.01	0.07	0.02
Finland	0.31	0.04	0.34
France	8.11	0.26	2.17
Germany	12.70	0.51	5.11
United Kingdom	0.74	0.11	0.94
Greece	0.95	0.13	0.05
Hungary	0.18	0.13	0.36
Ireland	0.31	0.06	0.17
Italy	4.32	0.88	1.06

Latvia	0.05	0.03	0.11
Lithuania	0.04	0.03	0.05
Luxembourg	0.00	0.02	0.10
Malta	0.01	0.06	0.03
The Netherlands	0.88	0.17	0.15
Poland	6.19	0.09	0.43
Portugal	1.62	0.11	0.23
Romania	0.30	0.01	0.05
Slovakia	0.09	0.03	0.13
Slovenia	0.09	0.05	0.08
Spain	1.19	0.60	0.28
Sweden	2.74	0.06	1.71
EU-28	42.92	3.99	13.85

Source: Mainil et al. (2017)

Based on the data above, this sector brings in 46.9 billion EUR in revenue, which represents 4.6 percent of overall tourism revenues, and 0.33 percent of the EU-28 gross domestic product. This trend is positive in every aspect, since it is also linked to beneficial effects on the labour market and the environment, and it may help in reducing tourism seasonality as well. Based on all of the aspects observed, we can conclude that this market is stable and predict an increase in revenues every year.

Figure 1 shows the EU-28 health tourism shares from the country of origin perspective (domestic plus international departures) and from the destination perspective (international arrivals).

Figure 1. Health tourism shares in the EU-28 in 2014
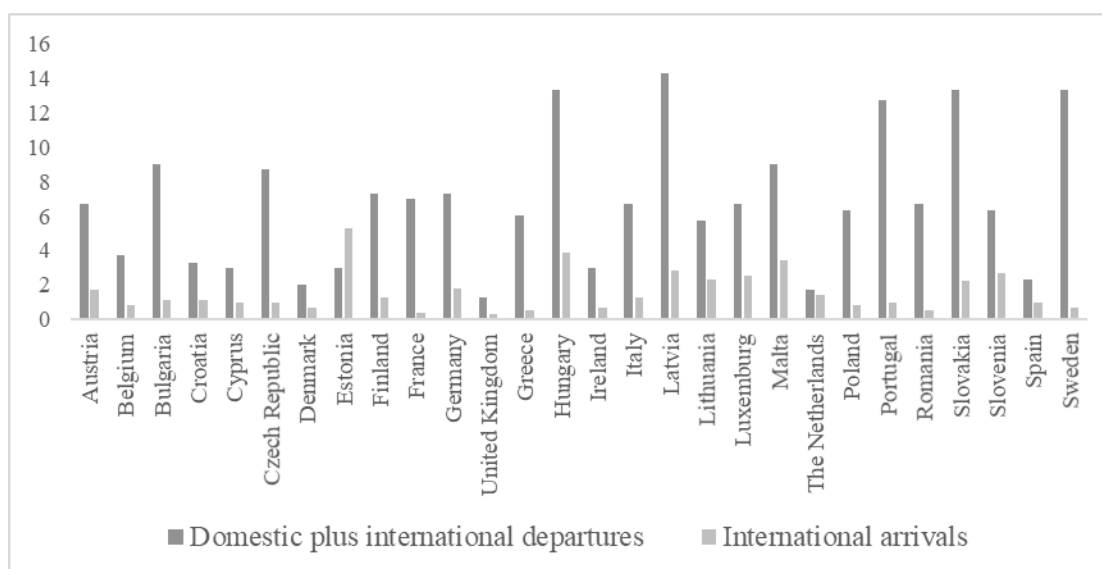
Source: Authors' own elaboration from Mainil et al. (2017)

The data presented here indicates that the share of total health tourism departures (domestic plus international) varies from approximately 1.3 percent in the United Kingdom to

14.3 percent in Latvia. The share of international health tourism arrivals varies from 0.3 percent in the United Kingdom to almost 3.9 percent in Hungary, pointing to their potential and good practices within the health tourism market. By observing each member state, we can conclude that according to the country of origin perspective (domestic plus international departures) the highest shares are recorded in Latvia at 14.3 percent and Hungary, Slovakia and Sweden at 13.3 percent. The destination perspective (international arrivals) has the highest share recorded in Estonia (5.3. percent) and Hungary (3.9 percent). Based on all data, we can conclude that Hungary is the only member state with vast potential and infrastructure in the sector of health tourism.

4.1. SWOT Analysis

By conducting strengths, weaknesses, opportunities and threats (SWOT) analysis, we provide a review of the market potential of health tourism in the European Union (Table 2). The most important conclusions about and recommendations for the future development of health tourism in European Union can be derived from the data presented in this table.

Table 2. SWOT Analysis of Health Tourism in European Union

Strengths	Weaknesses
• long and well-established tradition • accesibility of destination • high quality and standard of healthcare (medical tourism) • well-qualified service sector for providing healthcare services • environmental preservation (wellness and spa tourism) • Directive 2011/24/EU for patients' rights in cross - border healthcare (medical tourism) • expected sector growth (2 percent per year)	• no common definition • difficulties with data measurement • unused potential of member states' patients (medical tourism) • weak cooperation within health tourism establishments • lack of grouping, collaboration and joint promotion • need for public–private partnership (medical tourism) • need for alternative investment funds (spa tourism) • old-fashioned facilities
Opportunities	Threats
• emerging demand for health tourism products • growing income trends • accessibility of information about health services abroad • state support for health services export • tax incentives for health tourism • seasonality reduction • centres of excellence for rare disease treatments (medical tourism) • global lifestyle trends • existing infrastructure • rising potential of wellness industry as a workplace • European Union as a strong competitor on the global market	• strong global competition • lack of legislation • loss and degradation of natural resources • increased quantity – decreased quality • Brexit situation

Source: Authors' research

The strength of this market lies in the long and recognizable tradition of health tourism subsectors throughout the European Union, especially wellness and spa tourism. Europe's traffic infrastructure and central position make it an accessible destination, with some European Union member states playing leading roles in the world health tourism market. When talking about the main strengths of medical tourism, we can highlight the high quality and standard of healthcare in the European Union (especially perceived as such by international medical tourists), as well as a qualified service sector. The main strength of wellness and spa tourism is undoubtedly environmental preservation, since these subsectors imply the usage of and care for high quality environments. However, this sector's most prominent strength by far is its expected growth of 2 percent per year is expected according to the study from 2014 (Mainil et al., 2017). This is inevitable considering the ageing of the population, long waiting lists and many other factors, which call for a swift response from the health tourism industry.

On the other hand, one of the main weaknesses of health tourism development is that there is no common definition for health tourism, which makes it very difficult to track statistical data. The unused potential of medical tourists coming from within the European Union, due to their insufficient knowledge of the Directive 2011/24/EU (which guarantees their right to seek treatment in other European Union member states), is surely a significant obstacle as well. Additionally, there is weak cooperation between health tourism establishments (whereas forming strong networks should be a priority), as well as a lack of grouping, collaboration and joint promotion in this market. There is a strong need for public–private partnership in order to upgrade medical tourism services which form one of this subsector's biggest weaknesses, while the area of spa tourism requires European Union funds to replace the gap opened by insufficient private investment. The increasingly old-fashioned and decrepit facilities in some of Europe's health tourism hot spots are not to be neglected as well.

A summary of opportunities reveals emerging demand for health tourism products (stimulated by population ageing, numerous diseases and waiting lists in many countries) and growing income trends. Tax incentives offered by the government and state support for health service exports can play a significant role in promoting the growth of the health tourism industry. There is a multitude of ways to reduce tourism seasonality via health tourism since it does not depend on the seasons in a strict sense. For example, the winter season has proven to suit many spa destinations since their climate is mostly mild and attractive throughout the whole year. Many medical treatments are often recommended to be avoided during summer, which is certainly an opportunity to prolong the tourism season throughout the entire year. Nowadays, information about health services abroad has become much more accessible and free of cost as a result of information technology advances. In addition, much of the already existing infrastructure can be upgraded and improved with smaller scale investments instead of building completely new facilities. The main opportunity in the field of medical tourism lies in setting up centres of excellence for rare diseases that save on health costs and advance quality levels based on the cross-border healthcare Directive - which would stimulate the development of medical tourism's specialised accommodations and services. All of these opportunities lead to the conclusion that the European Union can be a very strong competitor on the global health tourism market, if managed with strong and precise cooperation and a joint promotion strategy.

The significant growth of global (particularly Asian and Middle-Eastern) competition is identified as the greatest threat. Lack of health tourism legislation, especially in the medical

subsector, and loss and degradation of natural resources on which spa and wellness tourism are based are not insignificant either. The Brexit situation is also increasingly mentioned as a threat for health tourism as of late (especially for the medical tourism subsector, since the United Kingdom is an important market).

4.2. Recommendations based on the SWOT Analysis

Several conclusions and recommendations can be extracted from the results of the SWOT analysis of health tourism in the European Union.

Firstly, when it comes to its strengths, there are no existing hints for the development of policies in the European Union, except the idea that health tourism should be more actively promoted because of its capacity to reduce overall seasonality. However, recommendations for European Union policies can be deducted from the weaknesses. The first and most important of these is that there seems to be a potential role for European Union coordination in gathering reliable data about the health tourism market. Some concrete suggestions regarding this problem already exist, saying that the solution lies in supporting The Tourism Observatory for Health, Wellness and Spa or the European Commission's Virtual Tourism Observatory. According to Mainil et al. "the lack of uptake of Directive 2011/24/EU in national legislation is a missed opportunity for medical tourism and the development of specialised accommodations and services. Therefore, the European Tourism Commission should try to cooperate with the Health Ministries and departments in all member states (2017: 67)."

There is also a strong need for joint promotion of health tourism in European Union, emphasized by the European Commission itself. This is becoming vital now that global competitors are getting more and more serious and upgrading their offers on an everyday basis. When it comes to global competition, local governments should take part in continuous funding and fostering a sustainable and faster development of health tourism. Key activities in this regard must include improvement of all types of infrastructure facilities including road access, electricity and water supply along with air traffic, safety and accommodation.

Compared to leading global players on the health tourism market, member state governments surely have a key role in designing strategy, but international financial institutions do so as well. A great example of this was the 'WelDest' project (2012–2014), funded with support from the European Commission (299,966.00 EUR) and in cooperation with five higher education institutions from Austria, the Czech Republic, Finland, Germany and the United Kingdom. The project's purpose was to create a framework and toolkit for destination management organisations, public bodies as well as private companies in destinations trying to become health and well-being destinations. An electronic handbook was developed to achieve these goals. It offers an interesting self-assessment tool, a development tool and a course with educator instructions.

Besides this, health tourism is eligible for European Union funding from the European Regional Development Fund in the period from 2014 to 2020 because it helps develop quality value-added products and services in niche markets by mobilising specific local resources and contributing to smart regional specialisation.

Finally, the renovation of a large number of ageing wellness and spa facilities might be part of, for instance, the European Commission's destination programmes such as 'European Destinations of Excellence'.

5. The Future Potential of Health Tourism in the European Union

The emerging focus on quality of life affects not only individuals itself, but entire economic and financial systems. Concepts such as personal development and fulfilling experiences coincide with increased interest in cosmetic and health treatments, illness prevention, slowing down ageing and self-improvement. In the European Union, there is a very strong trend of the ageing population placing great effort into becoming more active, healthier and living longer. There is also an increased desire for faster medical care, which puts focus on health services offered for sale on a commercial market.

The number of consumers travelling throughout the European Union for the purpose of improving their general wellness and health is rapidly growing, and the health and wellness tourism segment is in its early phase of expansion with considerable future potential that should be fully exploited.

According to the study International tourism trends in EU-28 member states - Current situation and forecast for 2020-2025-2030 prepared by United Nations World Tourism Organisation (UNWTO), "expects global international arrivals to the European Union to increase by 2.1 percent annually until 2025 (2008: 5)", but data on health tourism is simply not sufficiently reliable.

Table 3 shows the top ten wellness markets in Europe (in 2015), indicating that the wellness subsector makes up two thirds of the total health tourism market.

Table 3. Top Ten Wellness Tourism Markets in Europe in 2015

Country	Number of trips (millions)	Receipts / Expenditures (US $ millions)
Germany	58.5	60,229.7
France	30.6	30,216.1
Austria	14.6	15,409.3
United Kingdom	20.6	13,012.4
Italy	6.6	12,731.8
Switzerland	9.2	12,185.4
Spain	13.6	7,695.7
Turkey	9.3	4,818.4
Russia	13.5	3,546.9
Sweden	4.9	3,149.9

Source: Global Wellness Summit and Institute, https://globalwellnessinstitute.org/

Non-market sources point to stable development of the European Union health tourism, whereas market reports indicate spectacular future growth in all three markets. It is important to have in mind that medical tourism is quite a volatile market, depending on source market issues, legislation, waiting lists for regular healthcare and other factors.

By observing the wellness industry as a major subsector of health tourism, Global Wellness Institute Economy Monitor states that "the global wellness industry grew 10.6% in the 2013-2015 period, and global wellness tourism revenues grew from $494.1 billion in 2013 to $563.2 billion in 2015 or 14%. Which is a growth rate more than twice as fast as overall tourism expenditures (6.9%). The broader spa economy includes the $77.6 billion in spa

facility revenues, along with a cluster of other sectors that support and enable spa businesses. These include spa education, consulting, capital investment, associations, media, and events, which together add an additional $21.0 billion to the cluster. The overall $98.6 billion global spa economy has been growing by 2.5% annually in U.S. dollars since 2013 (or 12.1% annually when expressed in Euros), (2017:5)."

Table 4 shows the latest information on the economic impacts of the wellness industry in Europe according to the Global Wellness Summit & Institute (2015).

Table 4. Economic Impact of the Wellness Industry in Europe in 2015

	Direct impact	Indirect & induced impact	Economy – wide impact
Wellness tourism expenditures	563.2 billion dollars	1.1 trillion dollars	1.6 trillion dollars
Employment	17.9 million jobs	22.8 million jobs	40.8 million jobs

Source: Global Wellness Summit and Institute, https://globalwellnessinstitute.org/

Health tourism is definitely a new opportunity for the European Union countries – not only for the economic revival, but also for the sustainable development and for the new role in global tourism market. The potential of health tourism can be defined as a collection of internal possibilities of the country that enable the development of the health tourism in that country's territory. The economic impact of health tourism in the European Union segment is not negligible, despite missing data. It represents a very interesting potential to create new recognition and competitiveness of European Union in the domestic and foreign markets. Certain obstacles exist when we put the need for using the full potential and intensive development of health tourism subsectors in focus. That is surely a reason why a joint action in European Union is necessary to influence the creation of a positive and supportive environment for the further development of this type of tourism. In addition, there should be more collaboration between public medical universities and private and public hospitals to provide education and to train more specialists. Besides the current state of all the existing destinations, it is possible to "provoke" the transformation of the "forgotten" and low profitable health resorts and spas and their emergence into the health tourism destinations with new services and hotel capacities. Of course, this would be feasible primarily through the investments that are already planned on the regional and local levels and that may trigger the whole process. Since the lack of data is a significant limitation in defining the potential of health tourism in European Union, we agree that this tourism niche should have more attention, and that there should be more government initiative in constructing a basis for further research in this area.

Nevertheless, it remains certain that if the share of health tourism in the global tourism market increases, tourism seasonality will be significantly reduced, its sustainability improved, its mobility reduced and the rate of unemployment decreased.

6. Conclusion

Tourism plays a significant economic and financial role in many countries worldwide. It is a strong driver in generating gross domestic product, employment, attracting domestic and foreign investments, and improving the foreign trade balance. Health tourism may not be the leading type of tourism when measured by the number of tourists, but it is now considered as one of the most finance-consuming market segments due to the high cost of services and to the comparatively long stays it generates.

However, according to available statistics, the high numbers of 61.1 million health tourism arrivals and 46.9 billion EUR of revenue in the EU-28 show that this market has become a legitimate model for economic development, which has also proved to be accurate throughout the global tourism industry. In recent years, health tourism in the European Union and worldwide has developed as a very strong trend which is changing tourist preferences and redirecting emerging destinations' strategies, focused on high added value and high impact experiences, and reflecting healthier and more responsible lifestyles.

Tax incentives offered by the government can and should play an important part in promoting the health tourism industry. Currently, governments of certain European Union countries have already been introducing various tax-related and national policies. However, many other international funding sources for the European Union health tourism market exist, and some of the ones mentioned in this paper have already shown a positive effect.

Despite high-profile media interest and coverage, there is a lack of scientific evidence of the role and financial impact of health tourism. However, there are existing limitations of this paper. The lack of statistical data, leading to difficulties in tracking and projecting the future financial development as well as potentials of health tourism in general. Whilst the amount of literature written on the subject of health tourism increases, the material under review is hardly ever evidence-based. In order to stay competitive and satisfy present, but also attract potential demand, it is essential to continue raising awareness of the opportunities of health tourism in the European Union. Most European Union health destinations have a strong tradition, are characterized by great professionalism and can count on a highly developed tourism sector.

However, many challenges remain regarding sustainability, infrastructure, accessibility, constantly changing consumer trends and governance. All of these need to be addressed to guarantee successful health tourism development in European Union. One of the key challenges is the need for a joint vision in the field of health tourism strategy. That includes joint promotion and collaboration in order to succeed in the global market where competition is getting bigger and stronger everyday, especially in Asia and the Middle East.

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MANIPULATIVE LEADERSHIP, GENDER AND ETHICAL DECISION-MAKING IN ORGANIZATIONS

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Abstract

This research investigates the impact of gender on Machiavellian leadership and ethical decision-making. Quantitative research design using survey as a research instrument was applied in order to: a) identify leadership styles of managers in Bosnia and Herzegovina and b) analyze the effects of gender on identified leadership styles and ethical decision-making. The identified leadership styles were later tested on gender differences with Mann-Whitney U test. The study results indicate that gender differences exist only in Machiavellian leadership styles, but not in other leadership styles. The results imply men score higher on Mach scales and rather prefer Machiavellian/manipulative leadership practices contrary to women.

Key words: leadership, ethics, decision-making, gender, organizations

JEL classification: M10 (General); M14 (Corporate Culture; Social Responsibility); J16 (Economics of Gender)

1. Introduction

In the recent decade, unethical behaviour in the organizational context has received much attention worldwide. Transition countries are no exception. Furthermore, corruption and bribery in politics and in business in these countries remain to be the burning issue. Path from socialism to capitalism triggered many changes in all aspects of social life, including business and organizational dynamics. The shift from egalitarian, cooperative cultures in socialism towards more competitive and individualistic cultures in capitalism influenced managers to adopt manipulative leadership practices that favor short-term results and efficiency, often purposly neglecting the importance of ethical decision-making.

One of the most investigated individual variables in the extant leadership literature related to ethical decision-making is gender. General notion is that women prefer a more democratic, expressive, participative leadership while men are prone to autocratic, instrumental, aggressive and competitive leadership. Although results of studies on gender differences in decision-making are often inconsistent, they still implicate that women are more sensitive to ethical issues in comparison to their male colleagues.

It is important to emphasize how gender represents a complex socio-psychological construct but in the extant literature it is very often treated as dichotomous biological variable of sex. Treating gender merely as biological variable thereby excluding the importance of society and culture, could limit the potential of research studies dealing with both gender and ethical issues in business. Therefore, in order to make significant conclusions on the matter, in this paper gender differences are observed as biological, cognitive, social and cultural processes that shape the diversity, gender development and gender identification.

This paper presents an attempt to fill in the gaps in the existing literature regarding the ethical decision-making in transitional context by investigating the matter in relation to gender, addressing strong socio-cultural shifts which play an important role in decision-making, gender development and gender identification. It is also preassumed that these socio-cultural shifts from collectivistic, feminine organizational values to more competitive, masculine and individualistic values influence the mechanisms of ethical decision-making, shedding light on gender as significant individual variable which moderates the decision-making process. Research design of the study incloudes exploratory factor analysis aiming to identify the dominant leadership styles of managers in Bosnia and Herzegovina. Afterwards, identified leadership styles were tested whether gender differences exist in relation to leadership styles.

In summary, the research study indicates that transition from socialism to capitalism imposed manipulative leadership style as dominant leadership style which male managers tend to prefer in comparison to women. Since manipulative leadership practices can violate the organizational culture and image of organizations in public, the authors of the study recommend managers to embrace ethical organizational cultures by imposing ethical codes of conduct and egalitarian organizational values.

2. Literature review

2.1. Overview of Theories - Where Do These Gender Differences Come From?

Gender is one of the most investigated demographic variables which is considered to influence variety of social activities of humans worldwide. In the past three decades, the differences in ethical judgments of men and women have been a subject of attention among theoreticians and practicioners, especially in the field of psychology, management and political behaviour (Kohlberg, 1966 and 1969; Gilligan, 1977; Bem, 1981; Lifton, 1985; Bussey and Bandura, 1999; White, 1999; Overby and Hammond, 2003; Rayburn, Mazieikiene, 2004; Hyde, 2005; Baird, Zelin and Brennan, 2006; Gupta, Walker and Swanson, 2011, Smith, DeBode and Walker, 2011). Many important questions arise from such studies, e.g. are women more ethical than men and if they are, what are the roots to these differences? Will the inclusion of more women in the corporate boards and top-executive positions create ethical organizational environment?

Many studies dealing with the gender differences in ethical judgements tried to answer these questions by developing variety of scales and research instruments. However, White (1999) observes how results of these studies were arguable and less conclusive although differences have noted a tendency to show women as „more ethical" than men (Bampton and Maclagan,

2009). Lifton (1985) classifies gender difference questions in ethical judgement literature as follows:

a) Do men and women differ in their level of moral development? If they do, who is morally superior? Are those differences consistent throughout the entire developmental process?

b) If differences exist, are they a result of biology (sex) or socialization process (gender)?

c) Are individual differences in moral development an indication of individual differences in personality development?

In order to examine these issues more closely and with academic precision, it is imperative to review multidisciplinary theories dealing with gender differences. In extant literature, these theories can be differentiated as psychological (Freud, 1905/1930; Kohlberg, 1969), biological (Trivers, 1972; Fausto-Sterling, 1997), sociological (Eagly, 1987; Epstein, 1988) and socio-cognitive theories (Bandura, 1991, 1992; Bussey and Bandura 1999).

Psychological theories are based on a Freud's theory of adoption of gender roles within the family through the process of identification with same sex parent. These theories are accenting the parental influence on gender perception and conduct of children from an early age. Biological theories are dealing with dichotomous biological nature of gender differences which are displayed through male and female reproduction roles. Third stream of theories (sociologically-oriented) focus on institutionally constructed social roles of men and women. One of the representatives of third stream of theories is Kohlberg (1969), who introduced the stages of moral development, classifying them as presented in the table 1.

Table 1: Stages of moral development according to Kohlberg

Levels of moral development	Stages of moral development
Level I – Pre-conventional level	Stage 1: Punishment and obedience orientation Stage 2: The instrumental relativist orientation
Level II – Conventional Level	Stage 3: The interpersonal concordance or „good boy – nice girl" orientation Stage 4: The „law and order" orientation
Level III – Post-conventional, autonomous or principled level	Stage 5: The social-contract legalistic orientation Stage 6: The universal ethical-principle orientation

Kohlberg's findings (1969) are related to post-Kantian formalism and impersonalism, influenced by Kant's conception of moral rules as universal categorical imperatives, imposed by their formal features, that pertain to social issues (Campbell and Christopher, 1996). On the other hand, Hoffman (1970), as a leading representative of altruistic school of thought declared that „every moral person feels a certain amount of permanent guilt for not devoting

his or her entire life to the service of others". The guilt should be considered „normal" and „non-neurotic" and the absence of such guilt should indicate a deficient moral development. Altruistic view to moral development is focused on prosocial behaviour. Altruist theoreticians such as Eisenberg-Berg (1979) challenged Kohlberg's theory for restricting the domain of moral reasoning to issues of moral and political justice.

Furthermore, Gilligan (1982) criticised the rigidness of Kohlbergian approach to moral development through the theory of care ethics, which treats issues of self-concept and personal growth as morally relevant. Gilligan presents her work as a response to the Freudian conception that men have a well-developed moral sense whereas women do not, thereby referring to the work of her mentor Kohlberg, claiming that his scale provides an account of male moral development rather than of human moral development. In terms of the care ethics, moral reasoning does not involve rationality alone but a combination of emotion, cognition and action. Therefore, care ethics are not concerned with universality of right action (Allmark, 1995). Gilligan (1982) has suggested that women tend to demonstrate an „ethics of care" rather than a „justice" or „rule-based" reasoning which is frequently demonstrated by men. However, many traditional psychologists and philosophers have reasoned from an androcentric point of view, seeing woman's moral inferiority where they should have seen women's moral difference. Although formalist and altruist theories of moral develpment create sound foundation for debate on moral cognition, they rather create static framework since they neglect the influence of person's age, sociocultural and technological changes influencing gender development and differentiation

Bussey and Bandura (1999) gave an overview of previously mentioned theories which explain gender development and differentiation from different theoretical standpoints. The authors made remarks how these theories explain gender development and differentiation to some extent but with certain limitations. For instance, although psychological theories created good scientific foundation for obserververation of gender differences, they still consider gender as an early childhood phenomenon (Kohlberg, 1966). These theories do not focus on mechanisms by which gender-linked conceptions are acquired and translated to gender-linked conduct nor do they specify the motivational mechanisms for acting in accordance with a conception (Bussey and Bandura, 1999). Bandura (1986) argues that being introduced to a certian stereotype does not necessarily lead to behavior in accordance with it.

Bandura (1999) introduces the social cognitive theory (SCT) of gender development and differentiation which acknowledges the influential role of evolutionary factors in human adaptation and change, but rejects one-sided evolutionism by which social behaviour is the product of evolved biology. Instead, social and technological innovations are the factors that create new environmental selection pressures for adaptiveness and have no effect on biological evolution. The theory proposes that individuals observe others in order to learn certain behavioural patters where the environment, behaviour and cognition serve as the main factors influencing the development of an individual.

Although social cognitive theory enlightened some important aspects such as dynamics of motivational mechanisms, it still does not provide a clear answer how children differentiate the sexes before they have at least a basic conception of gender. Furthermore, it fails to impart a directedness of self-efficacy motives in gender development and lacks a clear description of

the central processes of the theory – how external standards of gender role conduct become internalized into personal standards (Martin, Ruble and Szkrybalo, 2002).

For obvious reasons, it is necessary for researchers to observe variety of views and different theories in order to articulate substantive conclusions on gender and moral reasoning. In a globalized world, gender differences become even more complex issue where variety of contigencies influence the ethical judgements of men and women.

2.1.   Previous research on gender differences in ethical decision-making

O'Fallon and Butterfield (2005) reviewed the ethical decision-making literature and found that gender continues to produce fairly consistent results, noting that where differences are found, women tend to be more ethical than men. One of the most interesting and most popular theories for assesment of ethical practices of managers is Machiavellianism which is interpreted as manipulative leadership. Manipulative leadership is described as manipulative, exploitive, agressive and unethical political behaviour, and has been more broadly applied to management and invidual actions (Bowlby, McDermott and Obar, 2011). Studies dealing with Machiavellianism and manipulative practices show how men in general score higher on Mach scales contrary to women (Menjeriskaja, 1998; Mazeikiene, 2004; Barlow, Qualter and Stylianou, 2011; Bowlby, McDermott and Obar, 2011;).

Menjeriskaja (1998 cited in Mazeikiene, 2004) found that a high levels of manipulation, domination, aggression, hostility and low level of emphathy are typical to individuals with masculine behaviour, while high levels of subordination, a communication strategy of emotional closeness and empathy, low levels hostility are typical to individuals with feminine behaviour. These findings are consistent with an observation that care ethics and ethical leadership styles (for instance transformational and charismatic) are more a characteristic of women while manipulative, more competitive and aggressive leadership styles are traits of men. Chodrow (1984) notes how gender personality helps in creation of patriarchal forms of capitalism, where men prefer the pursuit of professional achievement in the rule-bound, less affect-laden milieu of capitalist workplace contrary to women who prefer the more affect-laden and relational work of the care giving within the family.

3. From collectivism to individualism: Impact of socio-cultural changes in transitional societies on gender differences

Guided by Bussey and Bandura's work on social cognitive theory where gender identification and developement is also determined by socio-cultural and technological changes, it is necessary to consider the impacts of political, social and cultural shifts in Bosnia and Herzegovina, as transitional society.

According to Hofstede (1980) culture is a way of collective programming of the mind in a way that distinguishes the members of one group to another. Hofstede proposed cultural dimensions as follows: a) Individualism vs. Collectivism measured by Individualism Index (IDV) ranging from 0 (low Individualism, high Collectivism) to 100 (high Individualism), b) Power Distance measured by Power Distance Index (PDI) ranging from 0 (small PD) to 100 (large PD), c) Uncertainty Avoidance measured by Uncertainty Avoidance Index (UAI)

ranging from 8 (lowest UA country) to 112 (highest UA country) and d) Masculinity vs. Femininity measured by Masculinity Index (MAS) ranging from 0 (low Masculinity) to 100 (high Masculinity). The original work by Hofstede included the former Yugoslavia, with following scores: PDI = 76; UAI = 88; IDV = 27 and MAS = 21. The results implicate that former Yugoslavia was a collectivistic society with low masculinity, driven by values of in-groups and social networks, more traditionally associated with the feminine role: putting relationships with people before financial incentives, cooperating with people and emphasizing the quality of life in general. The decision-making was based on management of groups with relationships prevailing over the tasks where collective interests prevail over individual interests.

Bosnia and Herzegovina was a part of former Yugoslavia, from 1945 until 1992. After the war broke out in 1992, the state disintegrated. Bosnia and Herzegovina, Serbia, Montenegro, Croatia, Slovenia and Macedonia gained their political independence as seperate countries. The independed states became democratic societies, embracing capitalism and market economy.

Despite many benefits of free-market trends that improved standard of living in new democratic societies of western Balkans, the cost of democratization of former socialist country was enormous. Transition to liberal democracy combined with market economy triggered many changes in lifestyles, rate of employment, family relations, redistribution of resources and social classes. Political freedom, elections, absence of censorship and privatization coexist with negative consequences of transition such as high rate of unemployment, unequal distribution of financial and other resources, poverty as a result of inadequate structure of social classes, family stress, individualism and materialism (Dabrowski and Antczak, 1996 cited in Wejnert 2003). Additionally, , Bosnia and Herzegovina also fights with corruption and bribery in every aspect of political, social and business life.

The sudden shift from collectivism to individualism has influenced both popularity and necessity of manipulative leadership pratices in business and politics. However, if not controled, this manipulative behaviour can lead to the emergence of dark side of leadership (Brown and Mitchel 2010, Woods 2007, McIntosh and Rima 1997) which is related to toxic, abusive, manipulative (Tepper 2000, 2008, Frost 2004) and machiavellian behaviour (Richmond 2001, Rayburn and Rayburn 1996, Gable and Topol 1991, Murdack 1994, Hitt 1990, Girodo 1998). Another important notion related to gender differences is concerned with patriarchal family values in Bosnia and Herzegovina, according to which women are rather seen as nurturants, wives and mothers who often prefer family before career. They are not perceived as successful business women, oriented towards professional achievment (Sehic, Rahimic and Kovacevic, 2010).

4. Research design, methodology and sampling

4.1. Aim of the Study, Sample and Hypotheses

Driven by the complexity of gender indentity and development theories, relevance and inconsistent results in studies on gender differences in ethical decision-making, we articulated the main purpose of this research. Our aim is to:

a) identify leadership styles among managers in Bosnia and Herzegovina;
b) investigate whether gender differences exist in relation to identified leadership styles;
c) determine what is the nature of the effects of gender on ethical decision-making in business;
d) investigate whether female managers prefer more ethical leadership styles (transformational leadership) in relation to their male colleagues.

The study was conducted among managers in Bosnia and Herzegovina, with 20 female and 50 male managers, for a total of 70 respondents included in the survey results. Following the logic behind the purpose of this research, the hypotheses are defined:

> *H1: Male managers will demonstrate higher levels of manipulative behaviour in context of leadership contrary to their female colleagues.*
>
> *H2: Female managers prefer transformational leadership style contrary to their male colleagues.*

4.1.   Research Design

The exploratory design of this research was based on methodology developed by Girodo (1998). This author conducted a study with an aim to investigate leadership styles of police officers and their ethical decision-making. Girodo developed a questionnaire which is consistent with Hitt's theory of leadership (1990). Hitt (1990) proposes four styles of leadership: machiavellian/manipulative, bureaucratic, transformational and social contract leadership. Although Hitt's theory is based on four distinct leadership styles, Girodo used only three: machiavellian/manipulative, bureaucratic and transformational. The original questionnaire by Girodo consists of 24 statements evaluating ethics of decision-making on Likert's scale (1 – strongly disagree, 7 – strongly agree). The statements were aimed at determining manager's preference for various leadership styles. Validity of the questionnaire was tested by calculating Cronbach's alpha at the level of 0,88.

For the purposes of research on effects of gender on ethical decision-making in alignment to Girodo's methodology, the authors focused on 21 statements aiming to identify following leadership styles: Machiavellian/manipulative, Bureaucratic and Transformational. Validity and the sampling adequacy of the modifed questionnaire were tested. The value of overall Cronbach's alpha was 0,878, while Kaiser-Meyer-Olkin (KMO) sampling adequacy measure was 0,832 with significant Bartlett's test of sphericity (p=0,000). Quantitative analysis was employed as follows:
- exploratory factor analysis using Principal Component Analysis aiming to reduce the data in order to investigate patterns in correlations;
- Mann-Whitney U and Wilcoxon's W tests aiming to investigate whether gender differences exist in relation to identified leadership styles.

Since this research was based on guidelines by Girodo (1998), exporatory factor analysis was conducted with Principal Component Analysis using varimax rotation with Kaiser normalization in alignment with the methodology from Girodo's original research.

4.2. Research Results

Five factors were extracted with eigenvalues greater than 1. The focus was placed only on factor loadings with values above 0,50. Identifyied factors are described as follows:

- Factor 1 is a combination of bureaucratic and transformational leadership with an emphasis on bureaucratic leadership style (B_6T_4) explaining 35,571% of variance
- Factor 2 is machiavellian/manipulative (M_4) explaning 13,137% of variance
- Factor 3 is a combination of transformational and bureaucratic (T_2B) explaining 7,241% of variance;
- Factor 4 (M_2) and factor 5 (M) both show characteristics of machiavellian/manipulative leadership style, explaining 7,241% and 6,734% of variance respectively.

The identifyied factors explain 68,197% of variance. Table below illustrates the rotated component matrix.

Table 2: The rotated component matrix

N = 70, Principal component analysis – Varimax rotation with Kaiser Normalization, Kaiser-Mayer-Olkin test: 0.832	Bartlett's test: $\chi2 = 1025,609$ with $p = 0.000$ Total variance explained: 68, 197%				
		Factor				
Statements	Scale	BBureaucratic/Transformational	MMachiavellian	TTransformational/Bureaucratic	MMachiavellian	MMachiavellian
An important requirement for success in my job is to gain the kind of power needed to control things and shape events.	Manipulative	,,391	,,645	-,012	,,180	,,137
I see part of my effectiveness to be dependent upon the personal relationships I develop with those who have power.	Manipulative	-,151	,,818	,,168	,,065	-,022
It is important to cultivate certain relationships and to align yourself with those who have influence if you want to succeed.	Manipulative	,,138	,,867	,,017	-,080	,,050
Being able to influence salaries, promotion and rewards and disciplinary measures is an important way to keep subordinates on their toes.	Manipulative	-,043	,,641	-,200	,,360	,,150
In my job, I never reveal too much about myself but try to learn as much as I can about the other person.	Manipulative	,,068	,,186	,,034	,,085	,,867
I see my job principally in terms of setting objectives and seeing to it that they are met in an organized and orderly way.	Bureaucratic	,,804	-,005	,,155	-,151	,,008

In terms of dealing with subordinates in my job, the best tool is the operations manual which details how rules are to be followed.	Bureaucratic	,,691	,,097	,,058	-,004	-,017
I want to be remembered for my ability to have accomplished objectives and to have produced specific results.	Bureaucratic	,,867	,,109	,,137	,,056	-,036
In my job, I insist on my subordinates have a clear job description, functions and responsibilities.	Bureaucratic	,,863	-,039	,,057	,,111	-,053
It is important that I make my unit function efficiently and run like clockwork, never mind the personalities involved.	Bureaucratic	,,802	,,003	-,053	,,204	-,102
In my job, having a hierarchical organization of offices with clearly defined lines of authority is essential for being effective.	Bureaucratic	,,710	,,088	-,260	,,411	,,094
In my job, I actually motivate people by purposely giving them more responsibility and authority to get things done.	Transformational	,,766	,,091	,,284	-,126	,,083
It is important to me to take pleasure in the growth and self development of people under me.	Transformational	,,829	,,029	,,261	-,014	,,045
I want my effectiveness to be judged in terms of well-being of the lives of the people I have touched.	Transformational	,,585	,,314	,,396	-,238	,,187
In the long run, I could be most effective as a manager if I acted more like a coach.	Transformational	,,299	,,266	,,550	,,010	-,342
In my job, to be really effective I have to look at people in terms of their potential.	Transformational	,,803	-,031	,,347	,,079	-,029
In my job, I have found it important to always appear confident and self-assured even when at first I have little idea about something.	Manipulative	-,057	,,269	,,097	,,557	,,417
A good manager is serious about seeing to it that deviations from the rules are dealt with immediately, firmly and consistently.	Bureaucratic	,,450	,,228	,,265	,,407	-,371
If I could promote people their seniority and achievement would be the most important elements to consider.	Bureaucratic	,,384	-,130	,,571	,,357	,,176
In making a decision affecting other people I always make sure I have some room to maneuver just	Manipulative	,,022	,,071	,,160	,,728	-,021

		B (B$_6$T$_4$)	(M$_4$)	T(T$_2$B)	M(M$_2$)	M(M)
so that I don't back myself into corner.						
One of the best ways I can do my job is to appeal to the values and motives of the people who are below me.	Transformational	,,124	-,028	,,808	,,141	,,043
Leadership style		B (B$_6$T$_4$)	(M$_4$)	T(T$_2$B)	M(M$_2$)	M(M)
Total Variance Explained:		335,571%	113,137%	77,241%	66,734%	55,514%

Principal Component Analysis with varimax rotation and Kaiser normalization (rotation in 6 iterations)
Source: Authors' calculations

Analysis of factors retained was based on Kaisers K1 principle (Kaiser, 1960) and Cattell's (1966) scree plot test. Based on this analysis, it was decided to retain four factors that explain 62,683% of variance with majority of factor loadings above 0,70.

Interestingly, the leadership style which explains 35,571% of variance is bureaucratic/transformational, further implying how bureaucratic practices inherited in socialism are still rooted in organizational dynamics. This observation emphasizes the impact of cultural values within organizations as complex and timely processes. However, out of five identified leadership styles, the most frequent are manipulative which cumulatively explain 27,112 % of variance, indicating emergence and popularity of this style among managers.

In order to test whether the gender differences that exist in relation to all identified leadership styles, Mann-Whitney U and Wilcoxon's W tests were performed. The test results revealed the relation between machiavellian attitudes and gender.

The test showed statistically significant gender difference (p < .05) within two identified machiavellian/manipulative leadership styles. For bureaucratic/transformational (B$_6$T$_4$) and transformational/bureaucratic (T$_2$B) leadership styles there were no statistically significant differences in relation to gender of managers.

Table 3: Results of Mann-Whitney U test for gender differences and identified leadership styles

Leadership Style	Sig.	Mann-Whitney U	Wilcoxon's W	Z-score	Effect size r
Bureaucratic/Transformational B$_6$T$_4$	0,559	455,000	665,000	-,585	
Machiavellian - M$_4$	0,045*	346,000	556,000	-2,002	0,239
Transformational/Bureaucratic T$_2$B	0,603	460,000	670,000	-,520	
Machiavellian – M	0,041*	343,000	1618,000	-2,041	0,244

significance at alpha level of 0.05
Source: Authors' calculations

At the normal confidence level of .05 any Z score greater than 1,96 indicates a statistically significant difference in distribution of the ranks refering that female managers tend to less prefer manipulative leadership styles in comparison to their male counterparts. This result supports findings from previous studies dealing with machiavellianism and gender differences. However, the size of the effect must be considered, since for both machiavellian leadership styles small to moderate effect sizes were identified. The results of Mann-Whitney U test for machiavellian/manipulative leadership styles confirm H1, implicating that male managers demonstrate higher level of manipulative but also self-oriented behaviour and strategical approach in the context of leadership in relation to their female collegaues who are more concerned with emotional expressions and interpersonal relations.

Contrarily, H2 was rejected, since no statistically significant difference was detected in transformational leadership style in relation to gender of managers. However, it was interesting to investigate whether significant correlations exist between gender and transformational scale statements without generalizing the results of correlations.

Transformational leadership scale statements were tested in relation to gender using Spearman's Rho. The results showed statistically significant negative correlation (Spearman's Rho = -,236; p=0,049) between gender and statement that describes motivation techniques of transformational leaders towards subordinates by giving them more responsibility and authority in order to complete their tasks. Mann-Whitney U test for this statement showed statistically significant difference (p=0,050, Z= - 1,960) in preference to these motivation techniques in relation to gender. Suprisingly, this result indicates descending medians, implying that male managers have higher mean rank with value of 38,36 than female managers (mean rank=28,35). This result indicates that male managers in average prefer transformational motivation techniques in relation to female managers.

Furthermore, statement related to effectiveness of transformational leaders was tested on gender differences, measured by well-being of the lives of the subordinates and gender of leaders. Similarily to previous analysis, Spearman's correlation coefficient was negative and marginally significant (Spearman's Rho = -,217; p=0,071). Mann-Whitney U test was also marginally significant (p=0,072) with male managers scoring higher on average (mean rank=38,21) in relation to female managers (mean rank=28,73), implicating male managers on average more often observe their effectivenes by well-being of their subordinates contrary to female managers.

The results of correlation analysis for transformational scale statements necessitate future in-depth analysis of effect of gender on transformational leadership style aiming to draw more precise conclusions and implications for researchers and practicioners.

5. Discussion and implications

As Eagly and Johnson (1990) elaborate, men demonstrate more autocratic leadership styles (dominant, aggressive, competitive) contrary to women who prefer more democratic apporaches to leadership (cooperation, consensus, intuitive). Results from this study support Eagly's and Johnson's (1990) notions and also previous research findings on gender differences and ethical decision-making. Findings imply that female managers express more

sensitivity to ethical issues in comparison to male colleauges who tend to exibit more aggressive and competitive behaviour thereby complying to manipulative leadership practices in ethical decision-making.

Machiavellian orientation of male managers in Bosnia and Herzegovina certainly highlights the preference for individualistic, commanding and controlling leadership styles where hierarchy and dominance shape the organizational dynamics. Contrarily, women tend to avoid these type of pratices by not complying to manipulative behaviour, scoring significantlly lower on Mach scales in both identified leadership styles. These findings do not imply that men are unethical. Rather, they simply indicate that men are more prone to competitive and dominance-oriented behaviour in organizational context, while women have different attitudes in regard to ethical leadership.

It also must be taken in consideration that Bosnia and Herzegovina was part of socialist Yugoslavia, where economy was based on centralized, planned business activities, significantly influenced by state and politics. After desintegration of Yugoslavia, Bosnia and Herzegovina became democratic society and a free-market economy. These shifts in political and economic regimes certainly influenced organizational dynamics. Aggressive and dynamic competition on the markets requires aggressive leadership styles. Accordingly, Bass (1990) observes how manipulative behaviour of managers is more common in capitalistic economies, especially in modern business organizations in USA and Europe (Cyriac and Dharmaraj, 1994).

Altough machiavellistic leadership can be postively related to organizational effectiveness and performances (Gable i Topol, 1991; Simonton, 1986, Christie i Geis, 1970, Gardner i Avolio, 1995, Deluga, 2001, Bowlby, McDermott i Obar, 2011), if not controlled, it can lead to malpratices thereby creating negative consequences for both organizations and societies as well.

Findings from this study present important implications for pratictitioners in order to help them identify and control overly manipulative leadership behaviour, and encourage leadership models built on cooperation, collaboration, motivation and intuitive problem-solving when needed, possibly by focusing the attention on the importance of gender differences in leadership styles and inclusion of female managers on managerial positions where ethical dillemas are more frequent. Both male and female managers can be addressed to eachother to accept and exchange good leadership pratices nevertheless of their leadership style. For instance, women can acquire knowledge on more strategically defined practices and competitiveness from their male colleagues while male managers can benefit from learning about the importance of interpersonal relations and the motivation that lies behind it.

Nevertheless the individual charateristics such as gender, managers must be aware of the importance of ethical climates which determine the behaviour of individuals in organizations. Manipulative behaviour can endanger and polute human relations within organization and if not controlled it can damage the image of organization in public. By imposing explicit ethical norms and standards, managers can shape the ethics of organizational dynanamics and control overly manipulative behaviour. Promotion of egalitarian values, fairness and honesty through codes of conduct and variety of educational programs for employees should be placed on

priority list of top managers since these values must be introduced from the top of hierarchy, thereby implemented throughout the organization. Furthermore, it is advised that educational institutions such as business schools and universities responsible for educating new generations of managers should also enlist courses dealing with organizational ethics in their curricullum. When institutionalized as such, business and organizational ethics can have a huge impact on the process of identification and supression of manipulative behaviour before it influences organizational culture, profitability and societal image of organization.

6. Limitations and future directions

Although this study confirms that women and men express significantly different sensitivity to ethical judgements and dillemas, it also has certain limitations. In order to articulate more precise conclusions, it is necessary to conduct a research on a larger sample which will include more female managers in comparison to this research study. The small size of the sample makes it difficult to generalize the findings to a larger population. It would be interesting to investigate what the results would be if a similar study with the same survey instrument were conducted on a larger sample. Even though statistically significant gender differences were identified, the emphasis must also be placed on the size of the effects. In study by Kabacoff (2010) effects also tend to be small to moderate in size, meaning that gender differences can be observed as „subtle but real". It further implicates that gender differences, when found, can also be a reflection of other objective or subjective organizational and leadership contigencies and therefore can be observed as moderating variable.

Mann-Whitney U test was not significant for gender differences for transformational leadership. However we performed the correlation analysis to satisfy our curiosity. Correlation analysis revealed that men tend to prefer transformational motivation and effectiveness techniques contrary to women. Also, it would be interesting to devote research efforts to investigation of the preference for both men and women to transformational leadership style on a larger sample by including age as moderating variable which could influence the strength of relationship between gender and leadership style.

7. Conclusion

The results of this study are consistent with previous research on existing gender differences in ethical judgements and decision-making. The findings suggest that men and women differ in their perception of ethical dillemas in organizational context, implicating men's preference for more competitive, autocratic, aggressive and hierarchy-based leadership. In contrast, women view ethical dillemas in accordance to their leadership styles which are more democratic, intuitive and cooperation-oriented. This observation is similar to conclusions made by Smith and Oakley (1997), stating that different values of female executives will be reflected in distinct leadership styles.

As noted earlier in the paper, gender differences are product of different influences whether they are biological, psychological, sociological or socio-cognitive. Therefore, researchers must be cautious not to overly simplify the background of identified differences between men and women in business studies. Studies dealing with gender differences in organizational context often neglect the complexity of gender phenomenon or even tend to define leadership and

gender differences in a narrow manner. These pratices can lead to shortcomings, biases and stereotypical notions especially in changing environments such as transitional economies.

As proven in this study, leadership is a multidisciplinary and complex phenomena and it sets many „invisible"obstacles to researchers in this field. Therefore it must be assumed that it is dynamic, non-universal and influenced by contextual forces which differ from organization to organization and from culture to culture.

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BETTER REGULATION IN BOSNIA AND HERZEGOVINA: A CENTRAL PLANK FOR THE RULE OF LAW

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Abstract

The European Commission introduced a Better Regulation Agenda in 2015 and identified the areas of improvement for the existing body of EU legislation in 2017. This comprehensive package of reforms covering the entire policy cycle will boost openness and transparency in the EU decision-making process, improve the quality of new laws through better impact assessments of draft legislation and amendments, and promote a constant and consistent review of the existing EU laws, so that EU policies achieve their objectives in the most effective and efficient way. In such a state of affairs, how can we posit a constructive reinvestigation of the law-making process in Bosnia and Herzegovina? Is better regulation the result of good legislative tools and procedures that enables high quality legislation and rule of law? How does legal tools and procedures enables high quality legislation? The goal of this paper is to show that Bosnia and Herzegovina must rigorously assess the impact of legislation in the making, including best practices and principles during the legislative process which *relies on evidence and transparent processes*. It can only work if it is a shared commitment at all the governmental levels of Bosnia and Herzegovina.

1. Introduction

The three main pillars of the rule of law reform are justice, greater access to justice and support to economic growth, which is in accordance with the requirements for the EU accession process. In this process, Bosnia and Hercegovina in particular will be required to fulfil specific preconditions. Precisely, the Stabilization and Association Agreement states "in their cooperation on justice and home affairs the Parties shall attach particular importance to the consolidation of the rule of law, and the reinforcement of institutions at all levels in the areas of administration in general and law enforcement and the administration of justice in particular." (SAA, art.78) In this respect, the endorsement of the Bosnia and Herzegovina 2015-2018 Reform Agenda has reemphasized the need to implement further reforms in the rule of law area.

Jean Claude Juncker, the President of the European Commission, in his speech about the status of the European Union in 2017 said: "If we want more stability in our neighbourhood, then we must maintain a credible enlargement perspective for the Western Balkans. It is clear that there will be no further enlargement during the mandate of this Commission and this Parliament. No candidate is ready. But thereafter the European Union will be greater than 27 in number. Accession candidates must give the rule of law, justice and fundamental rights utmost priority in the negotiations."(President Juncker Union Address SPEECH/17/3165: 2017)

In the beginning of 2018, "A credible enlargement perspective for and enhanced EU engagement with the Western Balkans" (COM: 2018, 65) was adopted, commonly presented to the public under the title "the EU Strategy for the Western Balkans". It includes the views of the highest organisational structures of the European Union regarding the processes six Western Balkans countries joining the EU of: Bosnia and Herzegovina, Serbia, Montenegro, Albania, Kosovo and Macedonia. This is the most relevant document that presents the potential developments in these countries, which will lead towards the wanted goal and reach it – the goal of these countries joining the European Union. The existence of such a document facilitates but does not simplify the task of outlining this process and viewing it from the Bosnian perspective.

The required improvement of the economy is not possible without the rule of law. Legally dysfunctional countries cannot be competitive in the economic map of the world and this is why this topic is of extreme relevance for Bosnia and Herzegovina. In the abovementioned document, for which it is justified to say that it represents a complete program of changes in specific countries that are required for their accession to the European Union, the rule of law has again been given central importance. A clear determination and representation of the meaning of the rule of law and legal certainty as *sine qua non* is a precondition of economic attractiveness to foreign investors and economic development. If there are no rule of law and legal certainty, there is no and there cannot be any serious, systematically established and long-term oriented foreign investment.

In research paper (Rigobon, Rodrik, 2004:5) authors discussed interrelationship between rule of law, democracy, openness and income. Based on previous literature overview and returning to the questions and statements they posed in their paper, their main important

findings that support our research and posted questions is that "Democracy and the rule of law are both good for economic performance, but the latter has a much stronger impact on incomes (both statistically and quantitatively). Rule of law and democracy are generally mutually reinforcing and they tend to feed on each other." Their research results reinforce findings about a "strong casual impact from economic institutions (the rule of law) to incomes". (Rigobon, Rodrik, 2004:22).

Legal certainty, and therefore predictability as well, are conditioned by the quality of legal regulations. The strengthening of the rule of law is not merely an institutional issue; it requires social reforms. The goal of this paper is to show that Bosnia and Herzegovina must rigorously assess the impact of legislation in the making, including best practices and principles during the legislative process which *relies on evidence and transparent processes*. It can only work if it is a shared commitment at all governmental levels of Bosnia and Herzegovina. The plan of the paper is as it follows: Section 2 lays out the basic recquirements for the Western Balkan countries accession to the EU - reforms that must be implemented in the areas of the rule of law, fundamental rights and good governance. Section 3 presents principles of better regulation. Existing methodology for impact assessment in Bosnia and Herzegovina as prerequisite for better regulation is described in Section 4. Finally, Section 5 provides concluding observations.

2. Rule of law in focus of credible enlargement perspective

In the abovementioned document (COM, 2018: 65), it is clearly stated that the fulfilment of the set requirements will most probably enable Montenegro and Serbia to join the European Union by 2025. For Bosnia and Herzegovina, such a possibility has not been anticipated, nor is it predictable. This means that, in such a process, Bosnia and Herzegovina could become fully surrounded by the EU Member States by 2025, while still outside it. This fact is of crucial relevance for the analysis of the present state in the country and the determination of a full program of its change in order to achieve the goal which is not questionable in the document.

In order for the Western Balkans countries to meet the conditions for the accession to the European Union, i.e. for them to meet the membership requirements and firmly strengthen their democracies, comprehensive and convincing reforms in the key areas are required, primarily in the rule of law, competitiveness and regional cooperation. "To make the ambitious best-case scenario a reality, action must be taken now" (COM, 2018:65). The reforms that must be implemented in the areas of the rule of law, fundamental rights and good governance are still the most important issues for the Western Balkans, and the European Union will evaluate the progress of the countries on the road to accession precisely based on the achievements in these areas (COM, 2018: 65). These states must adopt the rule of law, fundamental rights and good governance in a more powerful and more convincing manner. If these values are not respected, it is seen as a digression from or a threat to investment and trade. To the extent that the Better Regulation Agenda would be about reducing the quantity of EU regulation in the interest of business, it would seem to be a political choice and thus
need a clear democratic validation (see in ed. Garben, Govaere The EU Better Regulation Agenda: A critical assessment 2018:9).

Independence, quality and efficiency of the justice system must be ensured. The independence of the justice system and of judges is significant for ensuring lawfulness, as well as for the establishment of accountability of executive and legislative authorities. This is a precondition of any democratic society established upon the rule of law, which as such can ensure economic development.

Article II/3 e) of the Constitution of Bosnia and Herzegovina provides for the right to a fair trial and the right to a fair hearing in civil and criminal matters. One of the key elements of the right to a fair trial is to make decisions and finalise the procedure within a reasonable time period. In Bosnia and Herzegovina, in practice, even though there is a range of legal acts aimed at ensuring the right to trial within a reasonable time period, the inefficiency of the system of justice, long judicial processes and non-execution of judicial decisions are a reality (FIC White Book, 2015/2016: 79).

Independence of the justice system is a priority when it comes to the rule of law and legal certainty. A recent state study for Bosnia and Herzegovina regarding necessary improvements for business environment (FIPA 2018:28) that surveyed over 500 companies with foreign capital operating in Bosnia and Herzegovina lists legal uncertainty (which includes not only the courts and prosecutors, but also the too frequent and non-harmonised amendments to regulations in general) as one of the key reasons of their reinvestment plans not being as fast as they would like. For potential investors (investors that consider several countries for their investment, including Bosnia and Herzegovina), the matter of reliability of courts and prosecutors (along with the matters of availability of the needed workforce, political safety, etc.), i.e. the existence of a safe legal state is the crucial issue (more in: FIC White Book, 2015/2016).

In accordance with that, a resolution of open questions in Bosnia and Herzegovina, such as: an increase of the number of judges in economic disputes; a higher level of specialisation of judges along with the necessity to provide training for judges which would enable them to adequately understand the market and relevant legislation in Bosnia and Herzegovina; adoption of a specific package of measures regarding trial within a reasonable time period, and issues related to this; provision of a stable and predictable arbitration system that investors trust, acceleration of the harmonisation of data in the cadastre and land registries (FIC White Book, 2015/2016:86-87), as well as a number of other issues, is extremely important for ensuring legal certainty and hence positioning Bosnia and Herzegovina as a country attractive to foreign investment.

The countries must eradicate corruption, with no compromise (COM, 2018:65). Strong and independent institutions are important for the prevention and processing of corruption, as well as the implementation of more efficient investigations and initiation of procedures, which lead to just and valid judicial decisions. It is necessary to significantly strengthen the specialised investigation structures for fight against corruption and organised crime, as well as judicial authorities. Measures such as illegal asset forfeiture, loss of the right to perform public office, stricter code of conduct of public officials, and availability of information and appeal processes for citizens and business entities must be enforced and implemented.

The countries must set stricter frameworks for the prevention of corruption. A higher transparency is necessary in the management of public funds, particularly in all the stages of public procurement – the area particularly susceptible to corruption. The countries must significantly increase the transparency, competitiveness and lawfulness of public procurement tenders, restrict the use of secret procedures and include oversight that excludes political influence on bidders. Some authors argue that better regulation is a linear process in which a problem exists, information is lacking and public consultations produces information and the decision-maker can eventually decide based on the stakeholders' feedback (Carausan, 2016:120)

The Action Plan states that the use of transparent e-procurement available to the public must be fully developed in the period from 2018 to 2019 (Annex COM 2018 65:5.3). This way, the citizens will have a clear picture of how their tax money is spent, from the initial tender to the final execution of contracts. This is a framework for strengthening the citizens' tax morale, and hence for reducing grey economy. In public institutions, the culture of management accountability and internal control also has to be of critical importance.

According to the abovementioned Strategy, the fundamental rights are widely included in the legislation of the Western Balkans states, but a lot more must be done regarding their full application in practice. A particular focus has to be on the protection of freedom of speech and independence of the media as a pillar of democracy. The major measure proposed for the time period 2018-2019 in this area is the roll-out of support for the Western Balkans through the European Endowment for Democracy in the area of independent and pluralistic media and civil society (Annex COM, 2018 65:1.7). The strengthening of democratic institutions is of fundamental importance. This includes ensuring constructive dialogue in the entire political spectrum, particularly in the parliaments.

Public administration reform is a backbone for strengthening management at all levels. Public administration reform in the EU Member States is among five most important tasks to support economic development (Excellence in Public Administration for Competitiveness in EU Member States, 2012). This includes the improvement of quality and liability of administration, promotion of professionalism, depolitcization and transparency, including the hiring and dismissal of administration, more transparent management of public finances, and better services for citizens. Better regulation is a popular label for the regulatory reform agenda (Radaelli, Meuwese, 2009:639), but what is behind this label? Lodge notes, in his article on regulatory politics in Europe, the rise of academic interest around this topic (Lodge, 2008:289). Also Lodge (Lodge 2009:145) suggests that the contemporary debate is flawed by competing assumptions hiding behind a common language. A more promising approach is to embed high-quality regulation into regulatory conversations rather than imposing requirements through hierarchical means.

Impact assessment today is a fascinating point to observe how evidence-based policy and 'political' decision-making interact (Dunlop, Radaelli 2016:34). Governments must ensure for interest groups to actively participate in the processes of reforms and creation of politics (OECD, 2008, OECD, 2012). Research on regulatory quality has shown that it cannot be achieved by simply clamping down on the total number of rules. It requires a proper institutional design of regulatory oversight institutions (Dunlop, Maggetti, Radaelli, Russel

2012:24). This all must be introduced in a systematic and long-term established but urgently implemented process of digitalisation of the entire state system. All these reforms are the very essence of the road of the Western Balkans countries to the European Union. A conceivable momentum will be achieved only by the accomplishment of measurable and sustainable results. This is the view of the European Union Member States regarding the necessary systematic changes in the entire state order of the six countries. However, such changes can and must be made only by the authorities of these states. Iyigun and Rodrik analyze the interplay of policy reform and entrepreneurship in their cross-country evidence paper (Iyigun &Rodrik, 2004) in which their model offer insights why institutional reforms have worked in a handful of countries and failed in many others. In sum they argue that "on the normative side, it helps to identify the circumstances under which different types of policy reform - policy tinkering versus deeper institutional reforms - are likely to foster structural change and economic growth." (Iyigun &Rodrik, 2004:4)

3. Principles of better regulation

Better regulation means doing different things, and also doing them better. It does not mean to deregulate but rather to regulate better; achieving policy goals in the most efficient way, through EU rules when needed but also at the national level and/or through non-regulatory means whenever that is sufficient. The Commission wants to update its law-making practices to ensure that they meet with modern requirements and citizens' expectations for maximum transparency and wide consultation. Stakeholders also expect our laws to effectively deliver on the social, environmental and economic objectives we have set, to be well scrutinised in terms of the burden they create for businesses, citizens or public administrations when they are implemented, and to have clear measures for their success which are revised where necessary. (Better Regulation Agenda: Questions&Answers, 2015).

Better regulation relies on evidence and transparent processes, which involves citizens and stakeholders (Better regulation for better results - An EU Agenda COM 2015). As it was explained in the Communication from the Commission to the European Parliament and the Council, with this program, the EU legislation will be able to focus on the areas with the highest value added. The accomplishment of the goals of joint politics will become efficient and effective, clear, simple and understandable, and the regulatory burden of the participants will be reduced to the lowest level possible, hence increasing the competitiveness and the sustainability of the EU economy. The Commission identified the areas of improvement for the existing body of EU legislation (Completing the Better Regulation Agenda: Better solutions for better results, SWD 2017 675). When proposing new policies and laws, the Commission is focusing on the things that really do need to be done by the EU and makes sure they are done well.

In this context, the basic documents of better regulation are the following:
a)   *Interinstitutional Agreement between the European Parliament, the Council of the European Union and the European Commission on Better law-making*
b)   *Better Regulation Guidelines*
c)   *Better Regulation Toolbox*

Making sure the EU laws are fit for purpose,the Commission is assessing the performance of the existing body of EU law and making changes where necessary to keep the laws up-to-date. The Regulatory Fitness and Performance (REFIT) programme was established in 2012 to make EU law simpler and to reduce the costs of regulation while still achieving benefits. The Commission is strengthening REFIT, by creating more possibilities for stakeholders and EU countries to contribute. The REFIT platform chaired by First Vice-President Timmermans, collects suggestions and makes recommendations on how to simplify laws. The state of play of REFIT initiatives for simplification and reducing regulatory burden is published in the REFIT scoreboard. Evaluations and fitness checks are used to assess if EU laws, policies and funding programmes are delivering the expected results at a minimum cost.

Through its Work Programme on Better Regulation, the EC pledged to create, deliver and support the implementation of interventions of the best possible quality. This covers the entire cycle of politics, from its planning, adoption, creation, then implementation, application (including execution), evaluation and review. The purpose of all interventions, whether legislative or non-legislative, as well as the spending programs and other measures is to achieve certain goals. According to the Better regulation Toolbox (Better regulation Toolbox, 2017:6-7), the principles of better regulation need to:

a) Be well-planned and timely, and all the preparatory and analytical work, including stakeholder consultations, must be done in time to feed into the policy development process;

b) Be of the highest quality, and the basis of any stakeholder consultation should be clear, concise and include all necessary information to facilitate responses;

c) Be based on the best available evidence including scientific advice, or a transparent explanation of why some evidence is not available and why it is still considered appropriate to act;

d) Ensure wide participation of all interest groups throughout the policy cycle, and open web-based public consultations, which should be mandatory elements of any consultation strategy associated with and evaluation or impact assessment. Stakeholders must be given sufficient time to respond (12 weeks for consultation) or prepare responses (4 working weeks for meetings);

e) Comply with subsidiarity and proportionality and explain how these two principles are respected. The actions must be relevant and necessary, offer value beyond what Member State action alone can deliver and not go further than is necessary to resolve the problem or meet the policy objective;

f) Be comprehensive, while considering relevant economic, social, and environmental impacts of alternative policy solutions. Stakeholders' views must be collected on all key issues;

g) Be coherent across different policy domains. New initiatives, impact assessments, consultations and evaluations must be prepared collectively by all relevant services in the framework of interservice groups;

h) Be proportionate to the type of intervention or initiative, the importance of the problem or objective, and the magnitude of the expected or observed impacts;

i) Be clearly visible to the outside world if they are to be understood and credible. Results of evaluations, impact assessments and consultations should be widely

disseminated. Stakeholder responses should be acknowledged and consultation results widely disseminated through a single access point. The reasons for disagreeing with dissenting views must be explained;

j) Be objective and balanced. They should inform political choices with evidence, and not the other way around;

k) Be underpinned by sufficient human and financial resources to enable each evaluation, impact assessment or consultation to deliver a timely high-quality result. Director Generals should establish centres of expertise (or functions) to support Better Regulation activities throughout the policy cycle.

The application of such principles should provide a rigorous evidence base in order to adopt mindful decisions and help increase the effectiveness, coherence, usefulness, relevance and efficiency of the Commission's activities. In essence, this only refers to the impact of the EU legal legacy on the national legislation of the full members of the EU.

In the Credible Enlargement Perspective (COM 2018 65), it is clearly determined that Bosnia and Herzegovina significantly lags behind Serbia and Montenegro. It is not a consequence of anything but a lack of political will and synergy in the implementation of very clear requirements. For those who express discontent with a set time period for probable fulfilment of the required changes in the area of the rule of law and legal certainty, and hence fulfilment of the conditions for joining the European Union, there is only one answer regarding such discontent: European Union has widely opened its door to Bosnia and Herzegovina, but the set and known requirements must be met by the authorities of Bosnia and Herzegovina!

4. Principles of impact assessment in Bosnia and Herzegovina: a way to better regulation

At its best, RIA is a way to increase integrity and trust in the policy-making processes and improve regulatory outcomes by promoting informed decision-making, which is targeted, proportional, consistent, accountable and transparent (Camilla Adelle, Donald Macrae, Andreja Marusic& Faisal Naru, 2015:237). "While the European Commission is certainly the *chef de file* on issue of Better regulation in the EU, while generally subscribing to Better Regulation's objectives, the European Parliament has a rather different view from the Commission on some of the concrete requirements that it entails, or should entail, for the legislator, such as the obligation to conduct Impact Assessments and to take the Commission's assessment as a starting point ... All this means that we have to be very careful in drawing any firm conclusions about the features and consequences of Better Regulation in general and to refer to its specific 'incarnations' where appropriate" (see in ed. Garben, Govaere The EU Better Regulation Agenda: A critical assessment 2018:4)

The general goal of Regulatory Impact Assessment is to create the conditions for creating and adopting better regulation based on available facts and evidence, so that the legislation goals are met at the lowest possible cost and do not create obstacles to the business environment, citizens and society in general. It may be added that the general goal of the impact assessment process is also consideration of the proposals of possible normative or other solutions to encourage the business environment, strengthen the rule of law, and reduce the costs of implementing the legislation. At the same time, the requirements related to ensuring the protection of human rights and fundamental freedoms, personal and political

freedoms, as well as economic, social, cultural and other rights must be met (Methodology for Impact Assessment - Guide, 2017: 27).

The methodology for the BiH level (Methodology for Impact Assessment in drafting legislation for the BiH level, 2017) specifically prescribes principles for all impact assessments. The principles on which each impact assessment is based are as follows:
   a) Focus - theproposals for possible solutions are aimed at a complete or partial elimination of negative impacts of the identified problems;
   b) Proportionality – the proposals for possible solutions are proportional to the risk of causal links of the problems;
   c) Responsibility –the proposals for possible solutions are a reflection of a detailed assessment and selection of the most favourable solution that implies responsibility for action in a particular area, decisions made in such respect, consistent implementation thereof, including reporting obligation, especially with respect to responsibility for the consequences of selected solutions;
   d) Transparency - theproposals for possible solutions are the result of a detailed assessment of possible impacts and consultations with all stakeholders;
   e) Objectivity - the impact assessment and the proposal for the most favourable solution is based on an objective assessment according to the set criteria;
   f) Compliance - the proposed solutions are in compliance with the legal framework in BiH, international standards and the *Acquis*;
   g) Fiscal sustainability - the possible solutions and the proposal for the most favourable solution are in compliance with the medium-term fiscal framework;
   h) Comprehensive (integrated) approach - the impact assessment is conducted in a balanced manner, in a correlated method of assessing fiscal, economic, social and environmental impacts.

Other principles may also be discussed:
   a) Cost effectiveness in the implementation of impact assessments and throughout the process of adoption (passage) of legislation, in order for the costs to be planned, first of all, and then rationalised;
   b) Efficiency, in terms of appropriate promptness and mobility in individual stages, includingthe mandatory compliance with all the prescribed procedures;
   c) Sustainability of the proposed solution.

In FBiH, Article 4 of the Decree on Regulatory Impact Assessment Procedure (Decree, 2014) stipulates the following principles:
   a) Focus –the proposed options are focused on eliminating unwanted negative effects of the existing problems,
   b) Proportionality –the proposed options are applied when necessary and proportionate to the risk consequential to the problem,
   c) Responsibility –the proposed options are a responsible solution in the given areas and for given groups
   d) Transparency –the proposed options are the result of a transparent evaluation and consultation process,
   e) Objectivity –the impact assessment and the proposal for the most favourable option

are based on an objective assessment according to the given criteria, and
   f) Compliance –the proposed options are in compliance with other existing legislation.

The RIA Methodology in RS (Methodological Guide for Regulatory Impact Assessment for the RS Government, 2015) speaks in particular of the principles, and the principles are as follows:
   a) necessity, telling us whether we need a new regulation, whether it meets the standards and whether it can remove administrative barriers,
   b) efficiency, whereby we need to be sure that a new regulation can be adequately applied in practice and that the regulatory goals can be met as soon as during the first stage of application thereof,
   c) consistency is important in the regulatory process because it provides predictability and legal certainty to groups and individuals within one society and economy,
   d) proportionality means maintaining a balance between the benefits of a regulation and the constraint it imposes. In addition, this principle also ensures that the proposed burdens will not impose a risk or that the penalties for non-compliance will be proportionate to the risk,
   e) responsibility is assumed as a fundamental principle due to the complexity of the regulatory process. This principle means that there is a clear and certain role of those who propose regulation, those who need to apply it, those who need to respect it and those who are responsible for appeals
   f) transparency contributes to the quality of regulation, as it enables the immediate collection of information from citizens as consumers and especially those directly affected by the regulation. This approach gives greater credibility to the regulatory process due to the inclusion of all key stakeholders in the decision-making process.

5. Instead of conclusion

If we want to improve socio-economic environment of Bosnia and Herzegovina, attracting foreign investors is one of the most important prerequisites for this. If there is no rule of law and legal certainty, it means they ought to be built. Only when they are there, the doors to development and foreign investment will be open. This fact is of crucial relevance for the analysis of the Bosnia and Herzegovina current status and the determination of a full program of changes in light of credible enlargement perspective in order to achieve the goal - EU accession.
All this should be brought into the context of the principles on which the Better Regulation Tools are based, in order to achieve compliance with the solutions that come from the EU acquis. Such interaction between the European Union on one side and a single state on the other side would allow changes to the compatibility of state systems with the European Union.
On the normative side, to achieve this, there is an urgent need for operational plans for each of these areas. Of course, their application should be proportionate to the needs and the specifics of each level of government in Bosnia and Herzegovina. Legal certainty, and therefore predictability are conditioned by the quality of legislation. By showing the valid principles as a basis for better regulation for all levels of government in Bosnia and Herzegovina, we see that there are various solutions in terms of the type and number of

principles, however, a common denominator for the solutions can be found. Unavoidability of the following principles is common for all the solutions mentioned: proportionality, transparency, responsibility, efficiency, cost-effectiveness, fiscal sustainability. Better regulation in Bosnia and Herzegovina is a central plank for the rule of law and depends on quality of RIA processes, and it can only work if it is a shared commitment at all governmental levels of Bosnia and Herzegovina.

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LEVEL OF IMPLEMENTATION STRATEGY DEVELOPMENT OF SMALL HYDROELECTRIC SECTOR IN A FUNCTION OF INTENSITY EXPLOITATION RENEWABLE ENERGY AND DEVELOPMENT ENERGY MARKET IN THE REPUBLIC OF CROATIA

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Abstract

Implementation strategy in any organization contributes to a greater level of use of its own resources and achieving better positions on domestic and international markets. The subject of this paper is related to the establishment of interdependence between the degree of implementation of the strategies for the development of small hydropower plants with the intensity of use of renewable energy sources and the development of the energy market in the Republic of Croatia, while the research problem will analyze whether a greater degree of implementation of the strategy of development of small hydropower plants can increase the intensity of use renewable energy sources and the development of the energy market in the Republic of Croatia. According to the subject and the problem of research, the aim of the research is to determine how the degree of implementation of the strategy for the development of small hydropower plants affects the intensity of the use of renewable energy sources and the development of the energy market in the Republic of Croatia. The research results show that there is no statistically significant difference between the degree of implementation of the development of small hydropower plants and the intensity of the use of renewable energy sources in the Republic of Croatia and that there is no statistically significant difference between the degree of implementation of the development of small hydro power plants and the development of the energy market in the Republic of Croatia.

Key words: strategy, renewable energy, energy market development, Republic of Croatia.

JEL classification: L10

1. Intrduction

In recent decades, and especially today, renewable energy sources play an increasingly important role in world energy production. Although some of them are known and used since ancient times (eg use of hydro power to drive various machines, mills for grain, sawdust to the

first power generation plants), renewable energy sources are becoming more and more economically viable compared to rising oil prices other energy sources.

As a result of the fact that conventional energy sources are limited in quantity and that the energy sector is largely the cause of the above-mentioned harmful substances, the world is increasingly developing technologies for the use of renewable and ecologically clean energy sources. Among them, the most important source is water energy as an ecologically pure source without major emissions of harmful substances and adverse impacts on man and nature. It is therefore concluded that the use of renewable energy sources reduces the need for electricity generation using fossil energy sources. Ecologically, the world with a smaller number (installed power) of nuclear power plants, thermal power plants and other environmental pollutants would contribute to a healthier environment.

With unquestionable beneficial effects on the environment and the experience of developed countries, greater use of renewable energy sources has important economic benefits and benefits. The strategic development of small hydroelectric power plants and the continuation of the economic policy of the EU countries to invest in small hydro power plants means stronger economic activity on the side of the more advanced equipment, assembly, operation and maintenance, which would again mean opening new jobs and solving employment problems, which is troubling many countries of the European Union.

Hence, the term 'strategy', etymologically, strategically or generally, is derived from the words stratos (military) and agein (so it is in the original sense that the strategy of 'mastery of army management' is taken from military terminology but also the existence of an appropriate course of action, according to which appropriate activities are directed. Even today there is no single concept of strategy, so in practice, a variety of approaches to its definition are used. According to Sikavica, Bahtijarevic-Siber and Poloski-Vokic (2008, pp. 193) strategy is a plan for organizing an organization or a comprehensive plan for achieving the goals of an organization or a strategy of alignment within organizational resources and skills with the opportunities and risks created by the external environment .

Thompson and Strickland (1987, p.8) state that the strategy represents a way to use certain resources to take advantage of the appropriate circumstances to minimize the difficulty of creating the desired effects. In other words, the strategy gives answers to Buble questions (2006, p. 77):

- How to adapt to changing conditions?
- How to allocate resources?
- How to compete in each particular area in which the company appears in terms of satisfying customer needs?
- How to position a company and product in relation to competition and avoid difficulties?
- How to identify actions and approaches that strengthen every functional and operational part of a company?

Responses to the above-mentioned issues provide a process of strategic management whose fundamental goal is to set up an organization for tomorrow's success, compete for winning in today's markets (adapted to Zugaj and Brcic, 2003, p.117).

When defining the concept of strategy, it is important to emphasize that the formulation and implementation of the strategy aims to determine long-term goals of the company, adjusting the directions of business activities, determining the concept and choosing the resources needed to achieve the goals set).

Additionally, strategy is the organization's response to environmental challenges, and it is not surprising that an important step in formulating a quality strategy is its analysis that can essentially be divided into three basic categories (Matic, Pavic, Mateljak, 2009, p. 40):

- external environment analysis,
- internal environment analysis, i
- integration of external and internal analysis.

Therefore, the strategy is everywhere present, widespread and often unavoidable: its meaning and content does not coincide in any situation and depends on the time, space and area in which it is applied. In order for the strategy to be successful, it is necessary to identify certain elements and take them into account when forming business activities. Some of these elements are: aligning the business with the environment, shaping the future, pursuing success, entrepreneurial activity, consistent corporate behavior and a look at a comprehensive enterprise.

Strategy provides an answer to the question: Where does the company want to go and how to get there? It is a plan that integrates the organizational goals, policies and activities into a single entity. A well-formulated strategy helps the company to redirect and allocate its resources to a unique layout based on internal relative advantages and disadvantages, but also in line with expected changes in the environment and in line with the moves of competitors. The enterprise strategy is a 'fight plan' or 'game plan' made by its management and contains a whole range of business moves and methods that managers use to run their company. It also presents a plan of activities that will be realized in a competitive environment with the intent of achieving organizational goals, resulting in the interconnectedness of goals and business strategy.

Therefore, according to Bubli et al. (2010, p. 71) strategy and strategy formulation occupy an important place in the process of strategic management of the organization. The chosen strategy directs the company's intentions and the way of achieving goals. Research shows that enterprises with a clearly-defined strategy outgrow enterprises with developed mixed strategies. It is therefore assumed that companies with a clearly-defined strategy at the company level are achieving better performance.

In addition to the strategy, this paper will show renewable energy sources and the development of the energy market. The water flow energy was one of the first that man used to compensate for the need for own and work of domestic animals. To begin the use of water streams, the irrigation system is introduced, and the first water machine is probably a watercourse with water catching vessels, whereby the water from the water stream was raised to the reservoir from which the irrigation canal system started.

Environmental problems, as a result of technological development, especially the electric power, have brought the European Union to the need to define common goals in the field of renewable energy exploitation. Recognizing their importance, the European Union is through official documents Green Paper, White Paper (https://ec.europa.eu/commission/white-paper-future-europe-reflections andscenarioseu27_hr, 11.05.2018 .) and various Directives adopted the entire program of their use and encouragement. Thus, in 1996, at the European Union level, a document entitled Green Paper (https://ec.europa.eu/energy/en/publications/green-paper, 11.05.2018) was created. In this document it was concluded that in 1996 the share of renewable sources, including large hydro sources, in meeting the total consumption of the European Union countries was only 6%. This

document was only the first stage of the development of the European Union's energy strategy. The paper gives an overview of the situation at the time, explains the need to increase the share of renewable sources to meet consumption, and provides only basic energy policy guidelines both for the European Union as a whole and for individual countries. This document proposes a plan of activities, which states that the promotion of electricity produced from renewable energy sources has a high community priority due to the safety and diversity of energy, environmental protection and socio-economic cohesion. The plan was adopted by the Council Resolution of 08 June 1998 and by the European Parliament in its White Paper resolution. The resolution was adopted to promote renewable energy sources. It should be stressed that the role of this goal is not legally binding. Each country of the European Union in this regard brings its own strategy, within which it proposes its contribution to the overall objective and states the planned incentive measures.

In 2009, a new Directive 2009/28 / EC of the European Parliament and of the Council on the promotion of the use of renewable energy sources by amending, supplementing and abolishing Directive 2001/77 / EC and 2003/30 / EC has been published, while some the provisions of Directive 2009/28 / EC included in the Renewable Energy Action Plan. It sets a long-term perspective by 2020 with an assessment in 2030 and a plan of activities for the development of renewable energy infrastructure in the EU in line with the package of implementing measures for the EU's Climate Change and Renewable Energy Sources for 2020 (http:
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In order to realize the plans for the development of renewable energy sources in the European Union, the European Commission recommends to the countries of the Union that they have not done to orient their economic policies in this direction. In this respect, it is necessary to improve the financial conditions for renewable energy by creating various "green" funds, then public funds and other forms of subsidies, favorable loans and the purchase of electricity from renewable energy sources, all with the aim of encouraging potential investors. EU member states have set high targets for building renewable energy sources. Directive 2009/28 / EU establishes a 20% share of renewable energy in the total energy consumption of the year (http://www.nezeh.eu/assets/media/fckuploads/file/Legislation/RED_23April2009.pdf, 11.05.2018).

At its session on October 16, 2009, the Croatian Parliament passed the Energy Development Strategy of the Republic of Croatia (OG 130/2009). In the Energy Development Strategy, the need to exploit renewable energy sources is particularly emphasized. Renewable energy sources are a domestic source of energy and their use is a means of improving the security of energy supply, encouraging the development of domestic energy production and services, and the way of achieving environmental goals. The Republic of Croatia will maximally encourage renewable energy sources, but with the acceptable social costs of their use. Therefore, the following strategic goals have been set (OG 130/2009):

- The Republic of Croatia will fulfill its obligations under the proposal of the European Union Directive on the promotion of renewable energy sources on the share of renewable energy sources, including large hydro power plants, in gross direct energy consumption of 20%.
- The Republic of Croatia will fulfill its obligations under the European Union Directive on the share of renewable energy sources in transport in 2020 in the amount of 10%.

- The Republic of Croatia sets the target for a share of electricity generation from renewable energy sources, including large hydro power plants, to be maintained at 35% in total electricity consumption by 2020.

Utilization of hydro power for the production of electricity in small hydro power plants in the Croatian energy balance could contribute in the long term:

- diversification of electricity generation, supply security and consumer supply,
- reducing energy imports and increasing energy independence on foreign sources of energy,
- significant reduction of the bad environmental impact of the energy sector,
- the creation of new jobs, the development of underdeveloped areas and areas of special state concern, and the development of the energy market and entrepreneurship.

These goals represent equally valuable components of the energy strategy and the exclusion of any of these goals would mean a reduction in the value and quality of energy policy. Dynamics, as well as all the structural features of the energy sector development, depend on a large number of influential factors, most important of which are:

- economic development,
- energy sector reform and state measures,
- development of the international energy market and international influence,
- technology development, and
- global environmental constraints.

Each of the factors has its dimension of influence, and the consequences will be different levels of energy consumption and different energy production structures.

Investing in the construction of small hydropower plants, according to the experiences of developed economies, apart from circulating and holding money in the country and developing underdeveloped areas and areas of special state concern, would ensure an increase in the employment of the population. This would be achieved with two bases: the first relates to the direct employment of skilled and trained workforce within the energy sector and the other refers to employment in other sectors of the economy, such as the manufacturing industry (parts of energy equipment), the construction industry, the accompanying (servicing) activities and the like. This is achieved through the involvement of the domestic industry in the construction of small hydropower plants, and considering the technological possibilities of the domestic industry, it could fully participate in the construction of small hydropower plants, other than turbine manufacturing and assembly.

So, it is about projects that run the Croatian economy, as it is a transfer of technology and the adoption of parts for small hydro power plants by domestic producers. With this "know-how", our companies could emerge as exporters of technology to the east, given that the sector is experiencing high growth rates.

By initiating amendments to the existing laws to align them with the European Parliament Directives on General Rules for the Internal Electricity Market, the Republic of Croatia has assigned significant power to the small hydro power plants in the electricity market. According to the Electricity Market Act (NN, 102/15), a small hydro power plant as an energy entity that uses a renewable source of energy for the production of electricity in an economically feasible manner in an individual production facility and which is in harmony with environmental protection has acquired a place of privileged electricity producers in the electricity market in Croatia.

The small hydropower market represents a set of current and potential electricity customers and electricity sellers. Accordingly, the size of the small hydro power market depends on the construction of small hydro power plants as a producer / supplier of goods / services and on the number of electricity consumers (the amount of electricity consumed).

After defining the concept of the strategy, concept of renewable sources and the energy market, this paper defines the subject, the problem, the objective, the research hypothesis and the methods of research.

The *subject of this paper* is related to the establishment of interdependence between the degree of implementation of the strategy for the development of small hydropower plants with the intensity of use of renewable energy sources and the development of the energy market in the Republic of Croatia, while the *research problem* will analyze whether a higher degree of implementation of the strategy of development of small hydro power plants can increase intensity of use renewable energy sources and the development of the energy market in the Republic of Croatia. According to the subject and the problem of research, the *aim of the research* is to determine how the degree of implementation of the strategy for the development of small hydropower plants affects the intensity of the use of renewable energy sources and the development of the energy market in the Republic of Croatia. Considering that a greater degree of strategy implementation will enable a quick response to market demands, two fundamental hypotheses of research will be confirmed or overcome in the paper:

H1: Greater degree of implementation of the strategy for the development of small hydro power plants affects the increased intensity of the use of renewable energy sources in the Republic of Croatia.

In testing this hypothesis, it is assumed that the higher degree of implementation of the strategy for the development of small hydro power plants will cause a higher intensity of use of renewable energy sources in the Republic of Croatia.

H2: Greater degree of implementation of the strategy for the development of small hydropower plants affects the greater development of the energy market in the Republic of Croatia.

In testing this hypothesis, it is assumed that a greater degree of implementation of the strategy for the development of small hydropower plants will influence the higher degree of development of the energy market in the Republic of Croatia.

Empirical research will be carried out using common scientific methods, and in particular through the survey methodology and the method of processing data collected using the SPSS statistical package.

The expected contribution of the work is related to the determination of the intensity of the interdependence of the impact on the degree of implementation of the strategy for the development of small hydro power plants at the intensity of the use of renewable energy sources and the development of the energy market in the Republic of Croatia.

2. Previous research

Effective implementation of the strategy for the development of small hydro power plants aiming at the more intensive use of renewable energy sources, ie water, and thus the development of the electricity market, is of great importance for each country. Therefore, a number of authors' research on the importance of using water as one of the renewable energy sources in electricity production will be presented below.

Sokac (2012, p. 11-12) states in his paper that water power is one of the renewable energy sources. Yearly about 400×1012 m³ of water is discharged from Earth. Most of this water on Earth returns as precipitation. On the land fall about 100×1012 m³, of which 63% is again discharged and the rest flows through watercourses into the sea. The continent has an average altitude of 800m, so the total energy that can be obtained annually is about 80×10^3 TWh. Of this, it is technically usable about 20×10^3 TWh. Hydro energy comes from several sources. Solar energy is the cause of water movement in nature, which gives the energy of watercourses (rivers and streams) and waves, which have been used for the centuries to obtain waterborne mechanical work, and is most commonly used to obtain electricity in hydro power plants of various performances. The term hydro power includes all possibilities for obtaining energy from the flow of water in nature:

- from land-based watercourses (rivers, streams, canals, etc.)
- from sea shifts: tide and tide,
- from sea waves.

Land waterways come from the circulation of water in nature and their energy, in fact, originates from the Sun. Sea waves, at least those caused by weather conditions that are fairly regular and can be exploited also originate from solar energy. In addition to these, there are still waves that are generated due to the Earth's crust, such as volcanoes or earthquakes, but are not suitable for use due to the devastating effect. Unlike them, the energy of the sea changes comes from the interaction of the Moon and the Earth. Small hydro power plants generally contribute to the safety and reliability of energy supply, and are suitable for supplying locations away from the power grid where mostly potential small hydropower plants are located. Small flows, ie large variations in flow and low accumulation, have similar effects, as well as wind power plants, which can affect the stability of the power system. Small hydro power plants represent a combination of the benefits of electricity generation from hydro power and decentralized power generation, while at the same time showing no negative impact on the environment as large hydroelectric power plants. The development of the Cadastre of Small Water Resources in the Republic of Croatia is preliminary for 63 watercourses, out of a total of 134 analyzed, establishing the existence of 699 possible uses (approximate total installed capacity of about 177 MW and technically usable energy potential of 570 GWh) that could be used for construction of a specific power plant of 50 kWh up to 5 MW.

In their study Basic, Mahmutovic and Pavlin (1999, p. 8-10) emphasize that most of Croatia's water resources are located in 13 major watercourses with a total hydro power potential of 21.33 TWh. Of that, Drava, Sava, Kupa and Una are watercourses that only partly run through Croatia. Trebisnjica River is located in Bosnia and Herzegovina, but its energy use is the most favorable on the Adriatic coast, which belongs to Croatia. Construction of hydro power plants in Croatia since its first beginnings in 1895 was the largest growth since the second world war when the significant use of hydro potential in the Republic of Croatia began. In the period of commissioning of the first hydroelectric power plant Jaruga, up to now, a total of 24 hydro power plants have been built. According to available data, in 1999 Croatia had a total production capacity of 4396 MW. Of the total available generation capacity of the hydro power plant account for 47%, while thermal power plants together with the included 650 MW outside the Croatian border make up 44% of all sources. The remaining part of the capacity is filled by NE Krsko and Diesel power plants.

Jelavic, Horvath and Bacan (2009, p. 2-3) state that in 2007 the production of electricity from hydro power plants decreased by 27.4% in 2006, due to the bad hydrological

year. Due to the lack of electricity generation from hydro power plants, production in thermal power plants and public power plants increased. Renewable energy production recorded the highest growth rate of 200.7%, but it should be noted that the energy from renewable sources compared to total primary energy is very small. The use of renewable energy sources, with the exception of large hydropower plants and classical biomass (for heating), is almost neglected in total consumption. Renewable electricity production is mainly based on production from small hydro power plants and wind power plants.

Furthermore, Kuzmic (2016, p. 26-32), in addition to the analysis of renewable energy sources and energy policies in the Republic of Croatia, also states the impact of the introduction of renewable energy sources on sustainable development in the Republic of Croatia. In that part of her work she points out the advantages and disadvantages of using renewable energy sources. Benefits include the conservation of the environment reflected in 0% greenhouse gas emissions and other air pollution, encouraging the development of the economy, ie the development of the energy sector and all related industry related activities, innovations that encourage technical changes in new market structures, the development of technological changes and innovations that increase the demand for skilled labor, the creation of new opportunities for investing in "green" energy, economic development, employment growth, especially employment of the local population where there is a certain renewable source and ecological benefits, reduction of fossil fuel consumption and import dependencies. On the other hand, the disadvantages are the dependence of renewable energy sources on geographic distribution and weather conditions, ie, the lack of availability and availability of renewable resources, which is a considerable constraint and difficulty in electricity production, the existence of large daily oscillations in the availability of renewable sources, based on which electricity is generated, the inability to accept renewable electricity in the power system, the lack of power generation capacity from renewable energy sources, or the ability to produce so much electricity as a fossil fuel power plant, the achievement of less energy efficiency, with the exception of power plants and wind power plants, a considerably lower capacity factor than fossil fuel power plants and a relatively high cost of electricity production.

After reviewing the research conducted in the field of the use of renewable energy sources in the Republic of Croatia and their impact on the development of the power system, the results of the research will be presented below.

3. Research results

3.1. Research methodology

Two methods were used to prove or deny the set hypothesis of the research: the method of questioning and data processing methods through the SPSS statistical package.

The survey methodology was conducted on a sample of 20 large and medium sized enterprises in the Republic of Croatia dealing with the design and construction of small hydropower plants. The survey questionnaire was completed by all 20 companies, making the return rate 100%. The survey was conducted in the period of 27.10.2017. until 03.11.2017. years.

The survey methodology identified the characteristics and impact of the implementation of the strategy for the development of small hydro power plants at the intensity of using renewable energy sources and the development of the energy market in the Republic of Croatia. Once the data were collected, statistical data processing was applied

using the descriptive statistics method, correlation and comparative statistics. In order to investigate the statistical significance of the hypothesis hypothesis set up, t-test was used, a method for determining the statistical significance of arithmetic meanings between two samples in the study. If the result of the performed t-test shows that the difference between the arithmetic mean is not statistically significant then the hypothesis of the research is statistically rejection. On the other hand, if the difference between the arithmetic mean is statistically significant, the hypothesis of the research is statistically accepted. Performing a t-test also investigates statistical significance at a level of 5%. If $p > 0.05$ there is no statistically significant difference, and if $p < 0.05$ there is a statistically significant difference.

3.2. Sample characteristics

Before the results of the research hypothesis set out will be presented, an overview of descriptive statistics will be presented, which will outline the three basic features of the surveyed enterprises:
- the legal form of the company,
- ownership structure of the company,
- enterprise size.

For the purposes of this study, companies that are a joint-stock company or a limited liability company are surveyed. Figure 1 shows the legal form of the surveyed enterprises.

Figure 1. Legal form of surveyed enterprises
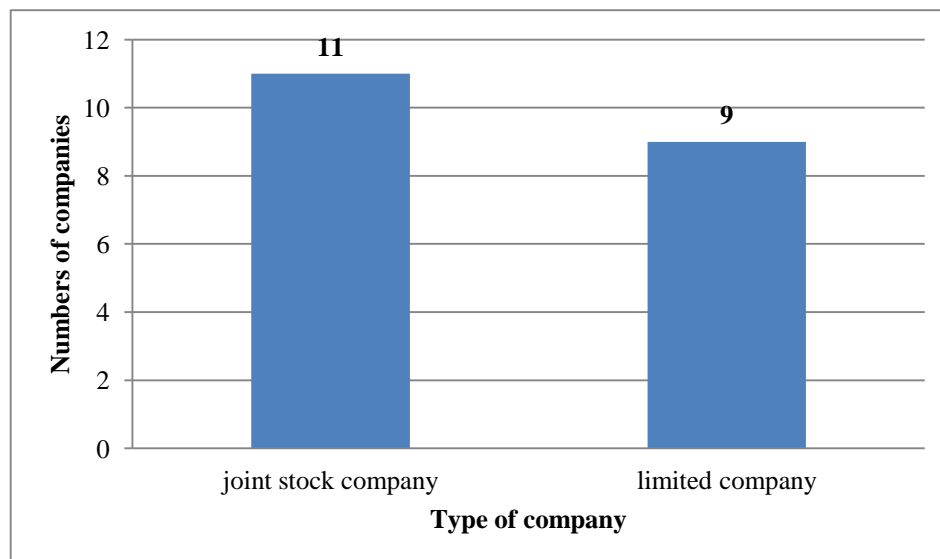
Source: Author's processing based on collected data

As can be seen from Figure 1 of the surveyed companies 11 are a joint stock company, while the other 9 are limited liability companies.

In addition to the legal form of the company, for the needs of the survey, companies that have ownership structure are surveyed:
- foreign private property,
- domestic private property,
- foreign and domestic private property,

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- private worker ownership (majority share of workers in ownership),
- predominantly state ownership,
- mixed ownership (state and private property).

Figure 2 shows the division of the surveyed enterprises with regard to the ownership structure of the company.

As can be seen from Figure 2, surveyed enterprises 10 are in private ownership, 4 are privately owned, 3 are in mixed state-private ownership, 2 are in private ownership, and 1 are privately owned.

For the purposes of research, surveyed companies are also included in the groups of medium and large companies ranked according to the number of employees. Figure 3 shows the division of the surveyed enterprises with regard to the size of the enterprise.

Figure 2. Ownership structure of surveyed enterprises
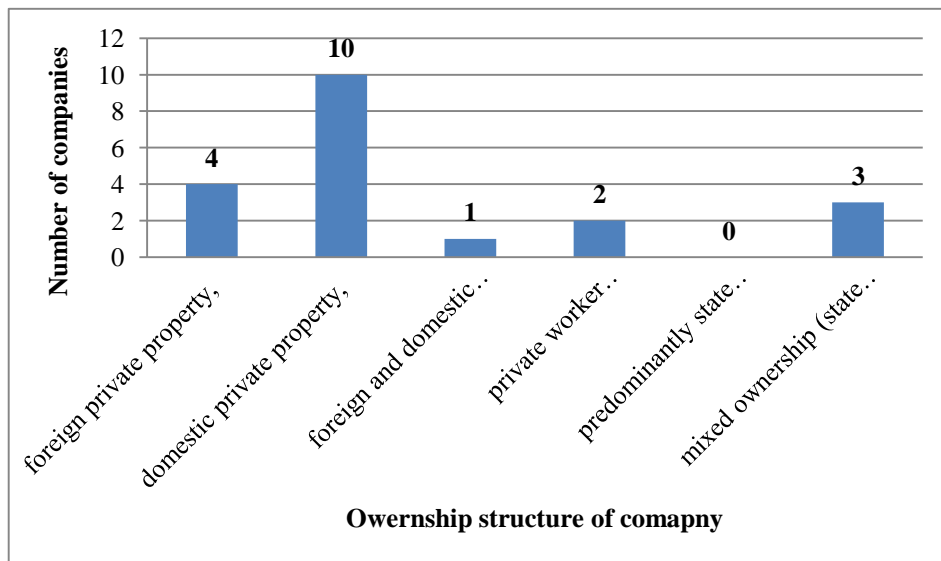
Source: Author's processing based on collected data

Figure 3. Size of surveyed enterprises
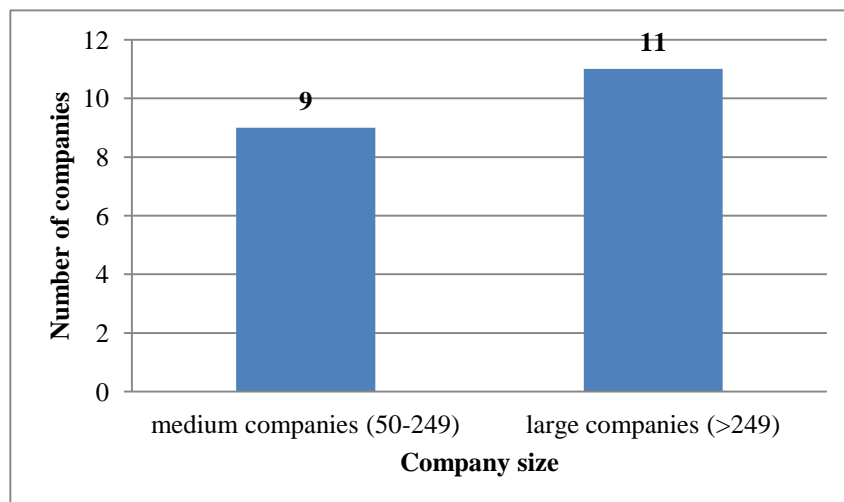
As can be seen in Figure 3. of the surveyed enterprises 9 there are 50 to 249 middle-sized companies, while 11 are in large enterprises with more than 250 employees.

3.3. Testing of research hypotheses

In this part of the paper, research hypotheses will be tested to determine the degree of implementation of the strategy for the development of small hydro power plants to diversify electricity production in the Republic of Croatia. For the purposes of identifying the degree of implementation of the strategy for the development of small hydropower plants, two stages have been defined, a higher and lower degree of implementation. All surveyed companies with a total average grade of implementation grade greater than 2.5 belong to a higher level implementation group. On the other hand, all surveyed companies with a total average grade of deployment grade of less than 2.5 belong to a lower-level implementation group. Tables 1 and 2 show the degree of implementation of the strategy for the development of small hydro power plants for all surveyed enterprises based on processed data.

Table 1. The degree of implementation of the strategy for the development of small hydropower plants

| Elements research	Number of companies									
	1	2	3	4	5	6	7	8	9	10
Ecological problems arising from the production of energy from non-renewable sources (water, air and soil pollution, disposal of toxic and radioactive waste, acid rain and climate change) affect human health.	4	4	5	5	5	4	5	4	4	5
The EU and the Republic of Croatia have developed incentive programs and measures for the construction of small hydro power plants.	3	4	4	3	1	1	4	1	3	1
There are not many companies involved in the implementation of renewable energy sources in Croatia.	4	4	5	4	1	4	3	3	3	1
Investing in small hydro power plants is a strategic interest of the Republic of Croatia.	1	3	5	4	5	5	4	4	3	4
ANALYSIS ENVIRONMENT	3	3,75	4,75	4	3	3,5	4	3	3,25	2,75
The future of electricity production should be based on renewable energy sources	4	2	5	4	5	4	4	5	5	1
Investments in the construction of small hydropower plants need to be further encouraged.	5	4	5	5	5	5	5	4	4	5
Croatia needs to use small hydro power plants to produce electricity today.	5	5	5	5	5	5	5	5	4	5
SETTING VISITS, MISURES AND OBJECTIVES	4,7	3,7	5	4,7	5	4,7	4,7	4,7	4,3	3,7
Business development should be based on the implementation of renewable energy sources.	4	3	5	3	4	4	3	4	4	1
Investing in the construction of small hydro power plants is socially useful.	3	4	5	4	5	5	4	3	5	5
The danger to the environment by the										

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production of electricity from small hydro power plants is negligible.	5	4	5	3	5	5	4	5	4	1
STRATEGY FORMULATION	4	3,7	5	3,33	4,7	4,7	3,7	4	4,3	2,3
More than half of the company's annual revenues should focus on investments in renewable energy sources.	1	1	4	1	3	3	4	3	3	1
People inside the company need to follow the world trends in the development of small hydro power plants.	3	4	4	5	3	5	5	5	4	4
It is necessary to invest resources in new products for the implementation of small hydro power plants.	3	3	5	4	3	5	4	4	4	4
IMPLEMENTATION STRATEGY	2,3	2,7	4,3	3,3	3	4,3	4,3	4	3,7	3
It is very important to follow the legal regulations relating to small hydro power plants.	3	3	5	4	3	5	5	5	4	5
The existing staffing structure of the employees needs to be adjusted to realize the implementation of small hydropower plants.	3	4	5	4	4	5	4	5	4	1
It is necessary to monitor the trend of investments in renewable energy sources in the world.	5	4	4	4	4	5	5	3	4	1
STRATEGIC CONTROL	3,7	3,7	4,7	4	3,7	5	4,7	4,3	4	2,3
LEVEL OF IMPLEMENTATION HYDROELECTOR DEVELOPMENT STRATEGY	3,53	3,48	4,75	3,87	3,87	4,43	4,27	4	3,92	2,82

Source: Author's processing based on collected data

Table 2. The level of implementation of the strategy for the development of small hydro power plants (continued)

Element istrazivanja	Broj poduzeca									
	11	12	13	14	15	16	17	18	19	20
Ecological problems arising from the production of energy from non-renewable sources (water, air and soil pollution, disposal of toxic and radioactive waste, acid rain and climate change) affect human health.	5	5	4	5	3	4	5	4	5	5
The EU and the Republic of Croatia have developed incentive programs and measures for the construction of small hydro power plants.	5	4	4	4	5	3	4	5	3	3
There are not many companies involved in the implementation of renewable energy sources in Croatia.	4	3	5	4	1	4	5	1	3	5
Investing in small hydro power plants is a strategic interest of the Republic of Croatia.	4	1	5	3	5	1	1	5	3	1
ANALYSIS ENVIRONMENT	4,5	3,25	4,5	4	3,5	3	3,75	3,75	3,5	3,5
The future of electricity production should be based on renewable energy sources	2	5	4	5	4	4	4	3	5	1
Investments in the construction of small hydropower plants need to be further encouraged.	5	5	5	4	3	5	5	5	4	4
Croatia needs to use small hydro power plants to produce electricity today.	5	5	5	4	3	4	5	5	4	3

SETTING VISITS, MISURES AND OBJECTIVES	4	5	4,7	4,3	3,3	4,3	4,7	4,3	4,3	2,7
Business development should be based on the implementation of renewable energy sources.	2	4	4	4	4	3	4	4	5	1
Investing in the construction of small hydro power plants is socially useful.	4	4	5	3	5	5	5	5	4	4
The danger to the environment by the production of electricity from small hydro power plants is negligible.	5	2	2	3	4	5	5	4	5	3
STRATEGY FORMULATION	3,7	3,3	3,7	3,3	4,3	4,3	4,7	4,3	4,7	2,7
More than half of the company's annual revenues should focus on investments in renewable energy sources.	1	1	1	3	1	3	1	1	5	1
People inside the company need to follow the world trends in the development of small hydro power plants.	4	5	5	4	5	5	4	5	4	3
It is necessary to invest resources in new products for the implementation of small hydro power plants.	4	5	4	4	4	5	4	4	4	2
IMPLEMENTATION STRATEGY	3	3,7	3,3	3,7	3,3	4,3	3	3,3	4,3	2
It is very important to follow the legal regulations relating to small hydro power plants.	5	5	5	4	5	5	5	5	4	3
The existing staffing structure of the employees needs to be adjusted to realize the implementation of small hydropower plants.	2	4	4	4	5	5	4	3	4	4
It is necessary to monitor the trend of investments in renewable energy sources in the world.	5	5	5	5	5	5	5	4	5	5
STRATEGIC CONTROL	4	4,7	4,7	4,3	5	5	4,7	4	4,3	4
LEVEL OF IMPLEMENTATION HYDROELECTOR DEVELOPMENT STRATEGY	3,8	3,9	4,2	3,9	3,9	4,2	4,15	3,95	4,2	2,96

Source: Author's processing based on collected data

As can be seen from Tables 1. i 2. the arithmetic mean of environmental analysis, mission setting, vision and goals, strategy formulation, strategic implementation and strategic control of each enterprise are calculated. After that, the average degree of implementation of the strategy for the development of small hydropower plants for certain enterprises was obtained from the arithmetic mean of the obtained arithmetic meanings of environmental analysis, mission setting, vision and goals, strategy formulation, strategic implementation and strategic control of each enterprise. The study obtained the lowest average value of 2,816.

Since there is no average rating of less than 2.5 when calculating the average values from Table 1. i 2., and no group of higher and lower levels of intensity of the implementation of the strategy for the development of small hydropower plants can be defined at previously defined intervals , this paper has started with a new calculation of new implementation intervals for the development of small hydropower plants. Namely, in the total grade of implementation of the strategy for the development of small hydropower plants, the lowest obtained average rating was 2,816 and the highest rating 5 was taken.

Between the least obtained average scores and the highest scores set, the arithmetic mean of the arithmetic mean will be calculated. Using the aforementioned procedure, the average value of 3,908 was obtained. Therefore, all surveyed companies with a total average

grade of implementation grade greater than 3,908 will belong to a higher level implementation group. On the other hand, all surveyed companies with a total average grade of deployment of less than 3,908 will belong to a lower-level implementation group.

It is important to note that the analysis found that out of the 20 surveyed enterprises, 8 belong to the lower level implementation group, while 12 belong to a higher level group of small hydropower development strategies.

3.3.1. Impact of the degree of implementation of the strategy for the development of small hydropower plants at the intensity of using renewable energy sources

After defining the degree of implementation of the strategy for the development of small hydropower plants, the impact of the implementation of the strategy for the development of small hydropower plants on the intensity of the use of renewable energy sources in the Republic of Croatia will be examined. Based on the hypothesis of the research it will be examined whether the higher degree of implementation of the strategy for the development of small hydropower plants affects the higher intensity of the use of renewable energy sources in the Republic of Croatia. For the purpose of this test, the results of intensity of use of renewable energy sources are first presented in Tables 3 and 4.

Table 3. Intensity of use of renewable energy sources for enterprises with a higher degree of implementation of the strategy for the development of small hydro power plants

Elements research	Number of companies											
	1	2	3	4	5	6	7	8	9	10	11	12
Investing in small hydro power plants contributes to the reduction of environmental pollution.	5	5	5	1	4	5	4	5	5	2	3	5
Investing in small hydro power plants contributes to water flow regulation and flood protection.	5	5	5	5	4	4	4	5	5	5	4	4
Your company is increasingly using renewable sources for electricity generation.	4	3	3	4	1	3	5	5	5	5	3	4
INTENSITY OF USE OF RENEWABLE ENERGY SOURCES	4,7	4,3	4,3	3,3	3	4	4,3	5	5	4	3,3	4,3

Source: Author's processing based on collected data

From Table 3 it is seen that the lowest value is 3 and the highest 5. The arithmetic mean of these two arithmetic meanings has an average value of 4.

On the other hand, from Table 4 it is seen that the lowest value is 2.66, and the highest 5. Arithmetic mean of these two arithmetic meanings has an average value of 3.83. From the results of the research it can be concluded that companies with a higher degree of implementation of the strategy for the development of small hydropower plants have a higher intensity of using renewable energy sources than those with a lower level of implementation of the strategy for the development of small hydropower plants.

To test the statistical significance of this research hypothesis, a two-way t-test was applied. After the t-test was performed, the value $p = 0.570205$ was obtained. Since $p > 0.05$ it is concluded that there is no statistically significant difference.

Table 4. Intensity of use of renewable energy sources for lower level of implementation of

Elements research	Number of companies							
	1	2	3	4	5	6	7	8
Investing in small hydro power plants contributes to the reduction of environmental pollution.	2	4	5	5	4	5	5	4
Investing in small hydro power plants contributes to water flow regulation and flood protection.	4	5	3	5	5	4	5	3
Your company is increasingly using renewable sources for electricity generation.	2	3	3	2	5	4	5	3
INTENSITY OF USE OF RENEWABLE ENERGY SOURCES	2,7	4	3,7	4	4,7	4,3	5	3,3

Source: Author's processing based on collected data

Although companies with a higher degree of implementation of the strategy for the development of small hydropower plants have a higher intensity of using renewable energy sources than companies with a lower degree of implementation of the strategy, it is concluded that *the degree of implementation of the strategy for the development of small hydropower plants does not affect the intensity of renewable energy utilization, thus the first hypothesis of research has not been confirmed.*

3.3.2. Impact of the degree of implementation of the strategy for the development of small hydropower plants on the development of the energy market in the Republic of Croatia

This section will examine the impact of the implementation of the strategy for the development of small hydropower plants on the development of the energy market in the Republic of Croatia. As noted above, surveyed enterprises with a total average grade of implementation of the strategy for the development of small hydroelectric power plants over 3,908 belong to the higher level of implementation of the strategy for the development of small hydropower plants. On the other hand, surveyed enterprises with a total average grade of implementation of the strategy for the development of small hydro power plants below 3,908 belong to the lower level of implementation of the strategy for the development of small hydro power plants.

The impact of the degree of implementation of the strategy for the development of small hydropower plants on the development of the energy market in the Republic of Croatia will be examined through another fundamental hypothesis of the research. The hypothesis of research will examine whether a higher degree of implementation of the strategy for the development of small hydropower plants contributes to the greater development of the energy market in the Republic of Croatia. For the purpose of this study, tables 5 and 6 show the results of the development of the energy market in the Republic of Croatia.

Table 5. Development of the energy market in the Republic of Croatia for enterprises with a higher degree of implementation of the strategy for the development of small hydropower plants

Elements research	Number of companies											
	1	2	3	4	5	6	7	8	9	10	11	12
Investing in small hydro power plants contributes to the development of underdeveloped areas.	5	4	4	5	5	4	5	4	4	5	4	5
Investing in small hydro power plants contributes to increasing employment within the energy sector.	5	5	4	4	5	4	4	5	4	5	3	4
Investing in small hydro power plants contributes to increasing employment in other sectors of the economy.	4	5	4	2	1	5	3	4	4	5	4	3
Investing in small hydro power plants contributes to reducing energy imports.	5	5	5	5	4	5	5	4	5	5	3	4
Investing in small hydro power plants contributes to the increase of electricity production in the Croatian energy balance.	5	5	5	5	4	5	3	5	5	5	4	5
ENERGY MARKET DEVELOPMENT IN THE REPUBLIC OF CROATIA	4,8	4,8	4,4	4,2	3,8	4,6	4	4,4	4,4	5	3,6	4,2

Source: Author's processing based on collected data

Table 6. Development of the energy market in the Republic of Croatia for enterprises with a lower degree of implementation of the strategy for the development of small hydropower plants

Elements research	Number of companies							
	1	2	3	4	5	6	7	8
Investing in small hydro power plants contributes to the development of underdeveloped areas.	2	4	4	5	5	4	5	4
Investing in small hydro power plants contributes to increasing employment within the energy sector.	4	4	5	5	5	4	5	2
Investing in small hydro power plants contributes to increasing employment in other sectors of the economy.	2	4	5	5	5	1	5	4
Investing in small hydro power plants contributes to reducing energy imports.	2	5	5	5	5	4	5	3
Investing in small hydro power plants contributes to the increase of electricity production in the Croatian energy balance.	4	5	5	5	5	4	5	3
ENERGY MARKET DEVELOPMENT IN THE REPUBLIC OF CROATIA	2,8	4,4	4,8	5	5	3,4	5	3,2

Source: Author's processing based on collected dana

From Table 5 it is seen that the lowest value is 3.6 and the highest 5. Arithmetic mean of these two arithmetic meanings has an average value of 4.3.

On the other hand, from Table 6 it is seen that the smallest value is 2.8 and the highest 5. Arithmetic mean of these two arithmetic meanings has an average value of 3.9. Based on the results of the research, it can be concluded that companies with a higher degree of implementation of the strategy for the development of small hydropower plants contribute to the greater development of the energy market in the Republic of Croatia from companies with a lower degree of strategy implementation.

To test the hypothesis, a two-way t-test was used. After the performed t-test, the value $p = 0.675664$ was obtained. Since $p > 0.05$ it is concluded that there is no statistically significant difference.

Although companies with a higher degree of implementation of the strategy for the development of small hydropower plants contribute to the larger development of the energy market in the Republic of Croatia than companies with a lower degree of strategy implementation, it is concluded that the *degree of implementation of the strategy for the development of small hydropower plants does not statistically affect the development of the energy market in the Republic of Croatia confirmed.*

4. Conclusion

In recent decades, and especially today, renewable energy sources play an increasingly important role in world energy production. Nature supplies us with free water, large quantities of water. On the other hand, there is less and less oil, coal and other alternative energy sources on our planet, whose cost is comparable with that fact. In addition, over the last few years, it has become increasingly clear that excessive use of fossil fuels is increasingly polluting the environment and that the energy sector greatly contributes to this. The impacts of energy sources on the pollution of the natural environment, observed in the chain from production to energy consumption, are very diverse.

As a result of the fact that conventional energy sources are limited in quantity and that the energy sector is largely the cause of the above-mentioned harmful substances, the world is increasingly developing technologies for the use of renewable and ecologically clean energy sources. Among them, the most important source is water energy as an ecologically pure source without major emissions of harmful substances and adverse impacts on man and nature. All EU countries have pledged to increase the share of renewable energy sources. Croatia as a member of the European Union also has an obligation to increase the share of renewable energy sources in total electricity consumption.

Therefore, in view of the importance of this topic for the Republic of Croatia, this paper has carried out a research that has been shown to have certain advantages in the use of renewable energy sources.

In testing the first research hypothesis that a higher degree of implementation of the strategy for the development of small hydropower plants affects the increased intensity of renewable energy utilization has assumed that the advantages of small hydro power plants compared to conventional sources of electricity in the context of environmental impact are manifested in their work not causing emitting greenhouse gases into the atmosphere, contributing to water flow regulation and flood protection. Although companies with a higher degree of implementation of the strategy for the development of small hydropower plants contribute to a higher intensity of renewable energy use than companies with a lower level of

implementation of the strategy, it is concluded that the degree of implementation of the strategy for the development of small hydropower plants does not affect the intensity of renewable energy sources, thus the first hypothesis of research has not been confirmed.

In testing another research hypothesis that a greater degree of implementation of the strategy for the development of small hydropower plants affects the greater development of the energy market in the Republic of Croatia has come from the assumption that by investing in the construction of small hydropower plants other than circulating and holding money in the country, as well as development of underdeveloped areas and areas of special state care, to ensure increased employment of the population. Although companies with a higher degree of implementation of the strategy for the development of small hydropower plants contribute to the larger development of the energy market in the Republic of Croatia than companies with a lower degree of strategy implementation, it is concluded that the degree of implementation of the strategy for the development of small hydropower plants does not statistically affect the development of the energy market in the Republic of Croatia. confirmed.

5. Limitations of research and recommendations for future research

When carrying out research for the purpose of this paper, there was one important limitation concerning the inability to increase the sample size in this research, as all renewable energy companies and hydro power plants are covered.

In addition to limiting the research, authors also propose recommendations for future research. Future research in this area should relate to the application of existing research activities in industries dealing with other energy sources, in determining the degree of implementation of the development and development strategy of their energy market and the intensity of use of other energy sources in the Republic of Croatia. Additionally, the same research process should also be extended by applying comparative statistics between these industries to examine the possible persistence of differences in the impact of the degree of implementation of the development strategy on the development of their energy market and the intensity of the use of other energy sources in the Republic of Croatia.

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THE EFFECTS OF ENERGY PRODUCED FROM RENEWABLE SOURCES ON CARBON DIOXIDE EMISSIONS: AN EMPIRICAL ANALYSIS OF EUROPEAN UNION MEMBER COUNTRIES

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Abstract

In this paper we investigate the impact of energy produced from renewable sources on carbon dioxide emissions in EU countries. The empirical analysis covered 28 European Union countries in the period from 2004 to 2012. The principal variable of interest was Share of energy from renewable sources in total consumption. We used fixed-effect panel data estimates with PCSE panel-corrected standard errors. This analysis provided strong evidence of a causal relationship between renewable energy consumption and CO_2 emissions. With regards to this government should design and implement effective support policies to promote investment in new renewable energy technologies in order to achieve steady and sustainable growth in renewable energy use.

Key words: CO_2 emissions, renewable sources, environmental policy, pollution, European Union countries

1. Introduction

Energy is one of the priorities in the world nowadays. Therefore, a lot is being done to improve the ways in which it is being produced and there are many possible solutions for this global issue. Environmental degradation together with different economic and social problems has led many countries to start producing energy using sources such as wind, sunlight, water, waves, geothermal and other. Renewable energy sources are unlimited, and they replenish naturally. Taking into account future and current social and economic needs, renewable energy production is considered as a clean source of energy. According to Panwar, Kaushik and Kothari (2011) the use of these resources produces a low amount of secondary wastes and minimizes environmental impacts. Non-renewable energy sources still stand for the traditional

and non-excludable way for the production of energy, but governments actively try to increase the share of clean production of energy and to replace the existing power plants that are largely contributing to the emissions of CO_2 into the atmosphere.

The assumptions are that the current methods of creating energy are about to change radically in the future. The reason for that is a low supply of natural gas and oil and more significantly, changes in climate. The climate changes are the result of the release of gases during the combustion of fuels. Non-renewable energy sources like fossil fuels were formed a long time ago in history from animal and plant remaining. Intensive use of fossil fuels, especially during the 20th century caused that coal reserves will be enough for the next 80 years and oil reserves for the next 50 years approximately.

Fossil fuels are the main resources to produce electricity today. Unfortunately, fossil fuels are the major polluters of the environment. The burning of fossil fuels releases significant amounts of CO_2, which is one of the gases that contribute to the change of climate, the creation of the so-called greenhouse effect and global warming. Carbon dioxide is considered as the most responsible and stands for about 57% of global warming according to Moriarty and Honnery (2012).

The average temperature on the surface of the earth has increased over time due to rising concentrations of greenhouse gases, including mostly carbon dioxide and also, nitrous oxide, methane, and sulfur oxide. Precipitation patterns, storm severity, and the increase in overall sea level are just some of the climate change occurrences that have emerged lately states Muis, Hashim, Manan, Taha and Douglas (2010). Moriarty and Honnery (2011) also state that methods for reducing GHG include using renewable energy sources and higher energy efficiency to cut CO_2 emissions from energy production.

The strategy of the European Union regarding renewable energy sources is on a path for a greener and low carbon economy. The goals have been set and determined for renewables, and they include reaching a share of 20% of all the energy consumed by the year 2020. These directives are obligatory for all the members of the union. The orientation towards renewable energy in Europe started in the year 1997. It continued to grow from its initial goals to de-carbonize the energy sector and address the problems of using fossil fuels to an industry that employs over 1.5 million workers today, with an expected increase to 3 million by the year 2020. However, this young and developing industry is still facing many difficulties and barriers, which are yet to be met and resolved. Nevertheless, the success of the production, promotion, and usage of this kind mean that renewable energy should not be ignored. European directives and legislative have the main goal of creating an energy market that is sustainable, competitive and secure. Developed countries produce the highest levels of emission, and must bear the highest responsibility for global warming. Nevertheless, action must also be taken by developing countries to evade increases in emission levels in the future while their population grows and economies develop (Omer, 2008).

The purpose of this paper is to analyze the relationship between production of electricity gained from renewable energy sources and CO_2 emissions. Furthermore, the purpose is to show the significance of renewables in the global production of energy and give emphasis to the environmental degradation caused by the CO_2 emissions.

2. Literature review

A story about reducing CO_2 emissions dates back to the 1990s when this issue was first mentioned aloud. Reducing global warming and steady increase in temperatures forced many countries to sit down and discuss what can be done. This first led to the United Nations Framework Convention on Climate (UNFCCC) that was then followed by the Rio Earth Summit on 9 May 1992. Kyoto Protocol on 11 December 1997, which is considered an extended version of the convention, came after (De Jonghe, Delarue, Belmans and D'haeseleer, 2009). The most recent European action plan proposed a 20% decrease in CO_2 emission by the year 2020, which can be further extended to 30% if there is a mutual international agreement.

Many studies and works deal with carbon dioxide emissions. These studies have been conducted in various countries with numerous approaches and findings. In the research of natural resources, few approaches have been applied. Some researchers like Van den Bergh, Delarue, and D'haeseleer (2013) analyzed renewable energy sources deployment and its effects on CO_2 emissions but also how they affect the European Union Allowance prices, for the period between the years 2007 and 2010 for 12 countries of the European Union and Switzerland. More often, approaches include the connection between economic growth and its impact on the environment like the empirical analysis conducted by Kearsley and Riddel (2010). Their emphasis was on Environmental Kuznets Curve (EKC), a hypopaperthat economic growth leads to increased pollution up to the moment when the economy reaches a certain stage and starts to decrease afterwards.

In addition to this approach Chiu and Chang (2009) included all 30 member countries of the OECD in their empirical analysis and covered a period from 1996 to 2005. They concluded that with the growth of the world economy the CO_2 emissions problem continues to worsen despite the increasing numbers of countries that have implemented renewable energy development mechanisms for reducing carbon dioxide emissions.

More authors like Sadorsky (2009), who examined G7 countries, agree that economic growth comes with staggering energy demands. Ohler and Fetters (2014) inspected the causal relationship between electricity generation and economic growth from renewables in 20 OECD countries between 1990 and 2008. Mourelatos (1998) deals with the conflicts among environmental and economic goals, influencing the development of renewable energy sources. Furthermore, strategic planning of the energy sector and impact of CO_2 reduction policies is examined in his work. While using various econometric techniques Khan et al. (2014) examined in their study the long-run relationship between GHG emissions and energy consumption for various groups of countries. Their result confirmed the aforementioned relationship.

Marques, Fuinhas, and Pires Manso (2010) have done a panel data research regarding the motivation behind the deployment of renewable energy sources for a period between 1990 and 2006 in European countries. They managed three kinds of factors that either encourage or discourage renewable energy such as political, socioeconomic (including CO_2 emissions) and country-specific. Their research came to unexpected results like the one that renewable energy preferences were smaller with larger CO_2 emissions. A higher level of economic activity

directly results in higher pollutions and, therefore, investments in renewable sources are smaller. On the other hand, they concluded that reducing energy dependency promotes the use of renewables.

Among researchers, there are also some doubts that the problem of greenhouse gases emissions can be solved, even if the renewable energy sources take a larger part in the portfolio of energy production. Chiu and Chang (2009) used panel data in their empirical approach that included all 30 OECD countries (at the time of the research) from 1996 to 2005. Their research showed a positive relationship between GDP growth and energy production despite the increases in shares of energy produced from renewable energy sources, which is explained by larger consumption of fossil fuels, and the increase in CO_2 emissions.

The second approach takes into account the connection between development of renewable energy sources and reduction of carbon dioxide emissions. Abolhosseini, Heshmati, and Altmann (2014) have done research on the effects of renewable energy development on CO_2 reduction. The empirical results in this research were founded on a panel data estimation using the European Union countries data observed from 1995 to 2010. They evaluated the effectiveness of renewable energy development on CO_2 emissions reduction, and found that increases in renewable energy production help reduce CO2 emissions. Furthermore, they have taken into consideration other elements such as technological innovation and market regulation findings. Instead, some researchers like Shafiei and Salim (2014) used the data for OECD countries from 1980 to 2011 to explore the determinants of CO_2 emissions and show how non-renewable energy consumption increases CO_2 emission and vice versa. OECD countries are largest energy consuming countries in the world with 41% of global energy consumption, which is still growing. In addition, the results of this research support the environmental Kuznets curve hypo paper between urbanization and CO_2 emissions. This implies that environmental degradation decreases at higher levels of urbanization.

3. Model

The empirical analysis covers 28 countries in the period from 2004 to 2012. These countries have put many efforts to help reduce CO_2 emissions with an attempt to reach 0 net CO_2 emissions by the year 2020 as in line with the global climate change objectives. These policy efforts include market regulations as well as public support to renewable energy production and development of environmentally friendly technology. Accordingly, the EU countries are leaders in the development of renewable energy and this is the reason why they are chosen to be included in this empirical analysis. In our estimation, carbon dioxide emissions are used as a dependent variable, and it is defined as man-made emissions of the 'Kyoto basket' of greenhouse gases. The variable does not include emissions and removals related to land use, land-use change and forestry (LULUCF); nor does it include emissions from international aviation and international maritime transport. Independent variables in this research are a share of renewables in gross final energy consumption, GDP per capita, final energy consumption, energy imports, environmental tax revenues and Total intramural R&D (Research and Development) expenditure (GERD). Specifically, following Abolhosseini, Heshmati and Altmann (2014), and Shafiei and Salim, (2014), we specify the following model using equation 1.

$$\ln CO_2 pc_{it} = \beta_0 + \beta_1 SRES_{it} + \beta_2 \ln GDPpc_{it} + \beta_3 \ln FENCpc_{it} + \beta_4 ENIMP_{it} + \beta_5 ENVTAX_{it} + \beta_6 \ln RDEXPpc_{it} + \varepsilon_{it} \ (1)$$

Where the dependent variable CO_2pc represents greenhouse gas emissions per capita of the country i in the period t; $SRES_{it}$ represents share of renewable energy sources in gross final energy consumption of country i in period t; $GDPpc_{it}$ represents GDP per capita of country i in period t; $FENCpc_{it}$ represents the final energy consumption of country i in period t, per capita; $ENIMP_{it}$ represents the net imports of energy as percentage of energy use of country i in period t; $ENVTAX_{it}$ represents the percentage of environmental taxes in total tax revenues of country i in period t; $RDEXP_{it}$ represents the total expenditure of country i in research and development per capita in period t; and ε_{it} is the random error depending on whether the model is estimated using fixed effects, random effects models or ordinary least squares (OLS).

Table 5. **Variables**

Variable	In formula	Source	Expected sign
Share of renewable energy in gross final energy consumption	SRES	European Environment Agency (EEA) - EUROSTAT	Negative (-)
GDP per capita	GDPpc	WORLD BANK	Positive (+)
Final energy consumption	FENCpc	EUROSTAT	Positive (+)
Energy imports, net	ENIMP	WORLD BANK	Positive (+) / Negative (-)
Environmental tax revenues share	ENVTAX	EUROSTAT	Negative (-)
R&D (Research and development) expenditure share	RDEXP	EUROSTAT	Positive (+) / Negative (-)

The variable of interest in this analysis is Share of renewable energy sources in total consumption. Calculation of the renewable energy share includes four different sub-indicators that are heating and cooling, transport, electricity and overall renewable energy sources share. Data has been collected annually from the year 2004. As mentioned by Eurostat, fundamental data for energy quantities are fuel specific units. These units are converted to common energy units like kiloton of oil equivalent (KTOE) for the purpose of calculation. There are some boundaries regarding a harmonized methodology since in some countries data collection systems and reporting are still at an early stage of development. However, firmly agreed internal methodology is the basis of most of the data. To conclude, this indicator measures how excessive is the use of renewable energy and by implication, the degree to which renewable sources substitute fossil and/or nuclear fuels. The expected sign was a minus, as we believe that the increase in share of renewable energy sources results in decrease of CO_2 emissions.

Furthermore, we include a set of control variables. The included control variables are frequently used in environmental and energy research (Marques et al., 2010; Marques and Fuinhas, 2012). Gross domestic product (GDP) per capita is included in our model as the key and frequently used growth indicator. We believe that the growth of the GDP per capita indicates more developed economy and therefore more energy production which will result in more CO_2 emissions. This is why the expected sign was a plus. Data for this variable are expressed in current U.S. dollars. The source of data for this variable is World Bank national accounts data.

Final energy consumption per capita is another control variable used in research. Eurostat provides data for this variable, which is measured annually and expressed in million TOE (tons of oil equivalent). For this research, we calculated values per capita. This is done in the same way as for the GDP per capita, dividing the data by the population. According to Eurostat, this indicator shows the sum of the energy provided to the final consumer for all energy uses. Final Energy Consumption includes total energy provided to industry, households, transport, agriculture and services. On the other hand, it excludes the energy industries themselves and the process of delivery to the energy transformation sector. This justifies our assumptions that the expected sign is a plus and that with the increase in final energy consumption, the CO_2 emissions will rise. According to the Eurostat data, for measuring the energy consumption at a final place of its use, this quantity is relevant. Also, it can be used for comparing the result to the Europe 2020 targets.

Net energy imports are an important variable estimated since less production of energy domestically is assumed to be associated with lower CO_2 emissions. The source of this data is the International Energy Agency (IEA), and it is measured in oil equivalents. It can be assumed that if country imports energy it will produce less energy since the overall needs for energy would be partially satisfied with imports.

The variable environmental tax revenues are measured as the percentage of total revenues from taxes and social contributions. The essential purpose of environmental taxes is to incorporate environmental costs into the costs of production and provide right market incentives structures that would potentially decrease damage to the environment relying on costs approach. Companies would then be forced to include the effects of their actions on the environment in the price of products or services. Hence, it is important that the amount of the tax applied equals to the cash value of the damage caused to the environment. Therefore, the expected sign is negative meaning that the higher environmental tax revenues are, the smaller CO_2 emissions are.

Total revenues from environmental taxes include taxes on pollution, transport, resources and energy. EUROSTAT publishes this indicator for the European Union Member States, Iceland, Norway, and the European Union (aggregated data). The time series covers the period 2000-2011.This indicator is selected as a main Resource Efficiency Indicator used for the evaluation of the progress towards the targets and objectives of the Europe 2020 Initiative.

Total intramural R&D (Research and development) expenditure (GERD) is used in this research as a proxy for countries' level of technological development and innovative capability. We believe it is important to include this variable in the model not only to control for the differences in the levels of technological development among countries, but also to investigate the impact of innovative efforts on CO_2 emissions. Given the right market incentives, smart regulation in the EU is designed to promote investments in the development of new or improved market friendly technology. We believe that this variable may pick up some of the effects of these efforts, and attempt to investigate the nature of the relationship in the EU context. At least it seems reasonable to assume negative relationship between R&D expenditures and CO_2 emission. The R&D data are collected annually by the European Union Member States based on a legal obligation. Eurostat research and development database holds

national data from the year 1980 until today, even though the data accessibility varies according to the country.

Descriptive statistics and correlation matrix are presented in Table 13 and Table 14.

Table 6. **Descriptive statistics**

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
CO_2 emissions (million tons)	252	10.44	3.99	4.76	28.39
Share of renewable energy in gross final energy consumption (percentage)	252	13.66	10.77	0.30	51
GDP per capita (US$)	252	30818.09	20511.49	3331.09	113738.70
Final energy consumption (million tons of oil equivalent)	252	41.15	0.40	0.40	223.40
Energy imports (% of energy use)	252	53.64	30.45	-65.74	99.87
Environmental tax revenues (% of total revenues from taxes and social contributions)	252	7.44	1.63	4.08	12.21
R&D (Research and development) expenditure (Euro per inhabitant)	252	416.06	407.55	10.9	1464.90

Table 7. **Correlation matrix**

	GHGpc	SRES	GDPpc	FENCpc	ENIMP	ENVTAX	RDEXP
GHGpc	1.0000						
SRES	-0.3586	1.0000					
GDPpc	0.6662	-0.0486	1.0000				
FENCpc	0.8209	0.0012	0.8370	1.0000			
ENIMP	0.1256	-0.2575	0.0866	0.1668	1.0000		
ENVTAX	-0.0195	-0.1511	-0.2773	-0.2151	-0.1289	1.0000	
RDEXP	0.4285	0.3207	0.8509	0.7144	-0.1785	-0.3258	1.0000

4. Results

The simplest way to estimate panel data is to use the data in a combined (pooled) form. In this case, the model is estimated using the ordinary least squares method (OLS). The analysis is first carried out using OLS regression in which we have ignored the nature of the panel data

(there is no difference between countries or period of observation). Table 15 presents the results obtained for the pooled OLS.

Table 8. **Results: OLS estimation**

	Model
SRES	-0.014***
	(-13.11)
GDPpc	-0.044
	(-0.83)
FENCpc	0.707***
	(17.56)
ENIMP	-0.001***
	(-2.86)
ENVTAX	0.025***
	(3.60)
RDEXP	-0.014
	(-0.48)
R-squared	0.77
Adj R-squared	0.76
N	245

Note: t statistics are in parentheses
*** Denotes significance at the level of 1%; ** Indicates significance at the level of 5%
 * Indicates significance at a level of 10%

According to the results of the OLS estimation, for the variable of interest SRES, the negative sign is expected and is significant at the level of 1%. This means that an increase of share of energy produced from renewable sources would result in a reduction of CO_2. Different from what we expected, GDPpc has a negative sign and it is not statistically significant. Both FENCpc and ENVTAX have a positive sign and are statistically significant at 1% level. On the other hand, ENIMP and RDEXP have the expected negative sign.

The OLS estimation is not an appropriate method of estimation in panel data and in this research it serves as a reference for checking the presence of multicollinearity in the model. This is accomplished by calculating the Variance Inflation Factor (VIF). The VIF statistics suggest that multicollinearity is present between GDPpc and RDEXP (see Appendix 1).

In this master's thesis, we use the random effects model and the fixed effects model. In the fixed effects model we assume that the individual effect is constant for each unit of observation. (Individual effect becomes part of the constant, but varies according to the subjects). The fixed effects model is based on the assumption that a particular sequence characterizes every time unit section and each period. This assumes that the deviation *εit* satisfies the requirements of the classical normal linear regression model.

Furthermore, the choice between the FE and RE models is made using Hausman's and Breusch-Pagan Lagrange multiplier (LM) test. The results for the FE and RE values of the model and these tests are presented in Table 16.

Table 9. **Results: FEM and REM**

	FEM	REM
SRES	-0.016*** (-8.73)	-0.015*** (-10.11)
GDPpc	0.009 (0.34)	0.014 (0.55)
FENCpc	0.762*** (13.56)	0.714*** (15.44)
ENIMP	-0.000 (-0.65)	-0.000 (-1.08)
ENVTAX	0.019*** (4.39)	0.018*** (4.30)
RDEXP	0.023 (1.14)	0.008*** (0.44)
R-squared (within/between)	(0.78 / .73)	(0.77/0.75)
F test/Wald chi2 Prob>F	125.75 0.000	811.28 0.000
N	245	245

Note: t/z statistics are in parentheses
      *** Denotes significance at the level of 1%
       ** Indicates significance at the level of 5%
        * Indicates significance at a level of 10%

We used Hausman test to check the null hypopaperthat the additional orthogonal condition for RE estimator is valid. The null hypopaperfor the Hausman's test states that the difference in coefficients between the FE and RE specifications is not systematic. Thus, a small p-value (<0.05) suggests rejection of RE Specifications.

Moreover, we have to take into account the distribution of the error processes and homoscedasticity of the residuals, and correlation of residuals within and across the panels. If the variance of random error is different for some observations and if the residuals show a systematic deviation for various values of the independent variables and systematic correlation, the assumptions of homoscedasticity and of no serial correlation in the data are not satisfied. To test for the presence of heteroscedasticity, serial correlation and cross-sectional dependence in the data, we use appropriate tests. Panel data often includes complex error processes associated with the presence of heteroscedasticity and serial correlation.

This is why, before choosing an applicable estimator to observe the estimates of CO_2 emissions, it is necessary to perform diagnostic tests. These include heteroscedasticity, the cross-sectional dependence, and serial correlation tests. Complicated error processes are often part of the panel data, and they include panel heteroscedasticity. This means that among countries different variances of the error processes occur. Besides, error processes in coexistent correlation (i.e. country i shows huge errors at time t) will frequently be linked with

significant errors for country *j* at time *t*, and serial correlation may be present. In regard to this, for groupwise heteroscedasticity we used Modified Wald test in fixed effect regression model. Also, we used Pesaran's test of cross sectional independence and contemporaneous correlation along with Wooldridge test for autocorrelation in panel data. The results indicate the existence of heteroscedasticity together with cross-sectional dependence and serial correlation between the variables in the model (see Appendix). In order to address this issue, we used a Beck and Katz's (1995) approach. With regard to the results of the FE model, Wald test for heteroscedasticity in the FE model, test for autocorrelation in panel data by Wooldridge and test for cross-sectional dependence, we used suggestions from Beck and Katz (1995) and performed OLS with panel-corrected standard errors using Prais-Winsten transformation.

Table 10. Prais-Winsten regression, correlated panels corrected standard errors (PCSEs)

	Model 1	Model 2	Model 3
SRES	-0.006*** (-2.74)	-0.009** (-3.72)	-0.009*** (-3.83)
GDPpc	0.115*** (2.65)	0.312*** (6.34)	0.253*** (5.34)
FENCpc	0.525*** (9.62)		
ENIMP	0.000 (0.30)	0.000 (0.81)	0.000 (1.06)
ENVTAX	0.013*** (3.15)	0.012*** (2.66)	0.013*** (2.90)
RDEXP	0.037** (2.09)		0.049** (2.09)
R-squared	0.78	0.78	0.78
F test/Wald chi2 Prob>F	3.48e+07 0,000	1.93e+07 0,000	1.22e+07 0,000
N	245	245	245

Note: Z statistics are given in brackets (PCSE); all regressions include constant, country and time dummies (not reported in the table).
*** Denotes significance at the level of 1%
** Indicates significance at the level of 5%
* Indicates significance at a level of 10%

The results of econometric analysis are shown in the Table 17. Precisely, the table shows estimates for OLS fixed-effect panel data together with PCSE panel-corrected standard errors. Table 17 includes the estimated model results which include the baseline specification (model 1), and also models 2 and 3 which are simplified from model 1 without two control variables FENCpc and RDEXP due to the problem of multicollinearity and the econometric consequences of the energy consumption variable. With regard to the latter, according to Jaforullah and King (2017) the energy consumption variable can have several unhelpful

effects on the econometric results when included as independent variable in CO_2 emissions models. Specifically, it may generate under- or overestimates of both the total effect of income on CO_2 emissions, and could also affect other control variables in the model, for example, that the energy consumption variable may lead to systematic volatility in the model's coefficients in case of omitted variable problem. This is why we tested for the robustness of the obtained results when excluding the Energy consumption variable from the models 2 and 3 to be estimated. Essentially, it seems important to note that the model is robust (the significance and the size of the obtained coefficients remain unchanged) to changes in the specifications of model. Interpretation of variables' coefficients refers to, on average, ceteris paribus conclusions. It should be noted that we included country-specific effects (country dummy variables). This was done in order to take into account for the disregarded country specific effects, time-invariant, and time dummies to check for the effects that are time specific e.g. to control for the economic crisis reflected in large decline of output in years 2008 and 2009. In addition, the possible delayed effects linked with time specific variation in the times after the crisis are included. Additionally, following Wooldridge (2003) we claim that coefficients are estimated with better precision when we include time dummies. Some of the variation in the dependent variables is absorbed by the independent variables in the model when time dummies that are time specific are absent. In most cases, we found that both time and country specific effects are significant in most cases, however they are not reported here due to space limitations.

Generally, all variables included in a model have the expected sign. The only exception is that the environmental tax variable has a positive sign. We find that share of renewable energy source, as our variable of interest, significantly decreased level of CO_2 across the EU countries. The extent of the coefficient reflects on economic importance of increases in share of renewable energy source that negatively impacts CO_2 emissions (i.e. 1% rise in share of renewable energy in gross final energy consumption leads to decrease in CO_2 emission per capita of about 0.006 percent). Overall, the empirical results support the hypopaperthat there is a significant and negative effect of the use of energy gained from renewable sources and CO_2 emissions in the European Union countries.

It is also found that CO_2 emissions are significantly impacted by the GDPpc variable. In addition, both FENCpc and ENVTAX are significant at 1% level and have a positive sign. The results obtained with respect to variable ENVTAX are somewhat unexpected. Specifically, the results for this variable suggest the positive relationship between environmental tax and CO_2 emission. A possible explanation for the obtained results for variable ENVTAX could be that higher revenues from environmental taxes will not necessarily be linked to higher tax rates, as a scenario with high consumption of lightly taxed goods is possible. Additionally, a more effective tax may diminish the base of the environmental tax, thereby reducing total revenue from environmental taxes. It is worthwhile noticing that most of the revenues from environmental tax come from taxes on motor fuels and demand inelasticity from these goods is such that these taxes do not cause reductions in the base of the tax. Actually, these taxes are far from consistent with the environmental damage generated by motor fuel consumption (Obrien and Vourch, 2002; Albrecht, 2006). The EU-28 countries have a relatively high GDP per capita and are considered developed countries. This means that the tax rate should be high enough to cause a subtle energy consumption reduction. Pearce (1991) showed that a decrease in carbon emission might not be the case unless the associated elasticities are recognized with

acceptable certainty. On the other hand, ENIMP has a negative sign and is not significant. This outcome indicates that the dependence on energy imports of EU countries is not associated with lower CO2 emissions.

Conclusion

CO_2 emissions have been put into the energy policy spotlight because of the global warming issues. Reduction of fossil fuels dependence is crucial if there is any serious effort to deal with global warming. Increased consumption of energy gained from renewable sources is likely to be caused by increased concern over global warming and generally increases in carbon dioxide emissions. Shifting completely to renewables is not possible now due to the various economic and technological problems. However, fulfilling the energy mix with clean energy is definitely a huge step in that direction. Some of the policies that are related to each country effectiveness when it comes to energy mix will have to be revised and further assessed. The reason is different infrastructural and geological structure of each country that renewable energy sources depend on. There are more obstacles for increasing energy efficiency including old electrical grids, which are also not adjusted for renewables. Countries will have to invest much time and capital into finding mechanisms and establishing long-term policies in order to overcome these kinds of problems.

The main goal of this study was to investigate the impact of energy produced from renewable sources on carbon dioxide emissions in EU countries. The empirical analysis covered 28 European Union countries in the period from 2004 to 2012. The principal variable of interest was Share of energy from renewable sources in total consumption. We used fixed-effect panel data estimates with PCSE panel-corrected standard errors. This analysis provided strong evidence of a causal relationship between renewable energy consumption and CO_2 emissions. With regards to this government should design and implement effective support policies to promote investment in new renewable energy technologies in order to achieve steady and sustainable growth in renewable energy use.

Recommendation for further actions regarding the reduction of carbon dioxide emissions and consumption of renewable energy sources, based on the results of the research of the European Union members, is to keep the positive way of fulfilling the defined goal - the reduction of GHG emissions by 20% until 2020. The EU member states have to continue and maintain decreased level of overall GHG emission, and also make significant developments in years to come in terms of policy developments. By maintaining this level of efforts done by the EU Member States until 2020, there is a possibility of emission reductions that will exceed projected target of 20% and continue its trend of extension in the future years as well. It is very important to pay attention to raising the awareness of the environmental protection. This could play a very important role when it comes to implementation of different policies associated with environmental degradation. It would be much easier to overcome climate change problems if these policies are not only considering energy sector but are also integrated into other industries like education, manufacturing, transport, etc.

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THE RELATIONSHIP BETWEEN TOURISM AND ECONOMIC GROWTH: A PANEL GRANGER CAUSALITY METHOD

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Abstract

This research aims to conduct a causality analysis of the mutual relationship between tourism and economic growth using the panel data of 113 countries while controlling for income disparity. The observed period is between 1995 and 2015. Panel Granger causality method is used for testing the existence of assumed causality between tourism and economic growth of the selected countries. This method provides also information about direction of their interaction. Findings indicate that tourism is reported to Granger cause economic growth. In addition, the findings suggest economic growth to be an important determinant of the tourism industry. Hence, this industry and economic growth are reported to reinforce each other suggesting a bidirectional positive effect when a single lag is introduced. Besides that it is important to emphasize that the obtained results are confirmed in the case when 2 and 3 lags are introduced respectively. Income disparity analysis confirms there is a bidirectional positive relationship between tourism and economic growth in low-, middle- as well as high-income countries.

Keywords: economic growth, Granger causality, panel data, tourism

JEL classification: Z32, O47

1. Introduction

The World Tourism Organization (UNWTO) indicates that tourism has been and is one of the best positioned economic sectors to drive inclusive socioeconomic growth. It also provides sustainable livelihoods, contributes to global peace and understanding and has it effects in protecting climate. Wide range of literature confirms the tourism-led theory, that is, tourism enhances the economic growth of the country by stimulating the development of traditional industries as well as the development of modern services of countries (Satrovic and Muslija, 2017; Muslija et al., 2017).

According to UNWTO Annual report in 2015 and 2016, tourist arrivals have grown up to 4 per cent every year comparing the previous year. With a potential increase such high every year, tourism sector has been considered as one of the leading, while contributing 10% of global GDP (UNWTO, 2016). Knowing the fact that tourism has an enhancing impact on economic growth, one might question that economic growth may be the first cause on tourism sector growth. Thus, it is now the question of which direction tourism and economic growth relationship have an impact on.

In the context of the previous question, the aim of this study is to discover the reciprocal cause-effect relationships between tourism and economic growth. The importance of this discovery is reflected in recognizing tourism as a sector in which more attention should be paid, and which at the same time depends on the economic rating of the home country. To investigate this, Dumitrescu-Hurlin (DH) test - panel causality technique- will be applied for 113 countries around the world for the years capturing 1995 to 2015. Countries sampled are disaggregated based on their economic well-being. Along with this test, the contribution to the literature is reflected also in the generation of an existing publication dealing with these phenomena, and comparison with previous research results.

Operating two and three lags in the econometric model specification, tourism and economic growth are reported to reinforce each other suggesting a bidirectional positive effect on low-, middle- as well as high-income countries. In other words, the results suggest a reverse causality of tourism and economic growth, that is, in addition to the positive impact of tourism on the economic growth, it is expected that growth tends be an important driver of tourism industry.

Based on the obtained results, policy implication would include promoting tourism activities and allocating fiscal resources to mentioned economic sector in order to increase economic growth and vice versa.

The paper will proceed as follows. In section 2, literature will be reviewed. Section 3 will provide insights on methodology and describe each variables used in the econometric model. In section 4, empirical results will be presented with interpretations, and finally section 5 will give concluding remarks. In Appendix 1 we present the list of countries sampled.

2. Literature Review

The relationship of interest in this paper has been an issue to be solved for quite long. Besides that, it is also a question of whether this impact is rather two way. To look for an answer, Wang *et al.* (2012), found a vital impact of China's domestic tourism on economic growth both in the short run and long run for the years from 1984 to 2009, while the impact forth folds in the long run. Also, they showed both domestic tourism and economic growth Granger cause each other. Similarly, Balaguer and Cantavella-Jorda (2012), showed a stable and positive

relationship between tourism and economic growth in Spain within the years from 1975 to 1997. Using a multiplier effect they have managed to confirm that tourism Granger causes economic growth in the long run. Dritsakis (2004), while observing a causal effect from economic growth toward tourism earning and real exchange rate in 1960 to 2000., concluded that the economic growth in tourism oriented country- Greece, was the result of simultaneous interaction of these two phenomena.

Lee and Chang (2008), disaggregated countries sampled as OECD and non-OECD countries and found bilateral causal relationship between tourism and economic growth in non-OECD countries-mostly undeveloped or developing, and unidirectional impact of tourism on economic growth in OECD countries-mostly developed countries in the long run for the period 1990 -2002.

Tang and Tan (2015) showed that tourism has a positive impact on economic growth in both, short- and the long-term in Malaysia between 1975 and 2011. Oh (2005), however, observed no long-run relationship between tourism and economic growth in Korea, yet found only one way relationship that economic growth favors tourism in the short run as well, but remain open to different methodologies, and different country samples. Brida and Pulina (2010), showed that in their extensive literature survey about tourism-led growth hypothesis, apart from the tourism oriented and developing countries no bilateral long run relationship between tourism and growth is observed. It is no surprise, as tourism- oriented and developing countries would enhance economic growth through tourism, and similarly by the improved level of growth.

Lanza *et al*. (2003), found that although comparing to other sectors, tourism is less powerful component of economic growth across 13 OECD countries and seemingly unidirectional impact of tourism toward economic growth is observed, yet it still has no negative impact in terms of contributing economic growth.

Çağlayan *et al*, (2012), by applying three-stages panel Granger analysis found mixed result depending upon country' well-being across 135 countries between 1995 and 2008. Apart from developed countries there is no evidence of causal relationship between tourism and economic growth. Narayan *et al*, (2010) found a positive and significant long run relationship between tourism and GDP growth for four Pacific Island countries by applying Pedroni's (1999, 2004) panel co-integration test in 1988-2004. Apergis and Payne (2012), found bidirectional relationship between tourism and economic growth for 9 Carribean countries during 1995 and 2007 using Pedroni's (1999, 2004) co-integration test. Dritsakis (2012), applied FMOLS and showed a long run interaction between tourism and economic growth of eight Mediterranean countries for the years 1980-2008.

Santana-Gallego *et al*, (2011), showed that tourism trade and tourism seem to have a bidirectional relationship, they both promote country's economy across OECD countries. Belloumi (2010), showed that while tourism-led hypothesis is held for Tunisia, the relationship is found to be one directed from tourism to economic growth and both series have a cointegration for the period 1970 and 2007. Balaguer and Cantavella-Jorda (2002), found out that in long term there is a stable relationship between economic growth and tourism using cointegration test.

3. Methodology and Variables

Seetanah (2011) indicates that the empirical evidence on the reverse causal relationship between tourism and economic growth is lacking in research to date. Lopez and Weber (2017)

suggest this is due to the issues assigned with time-series (unit-root), therefore the implementation of the new econometric tests can be very complex in the case of panel data.

This is why primarily focus of this research is to support the empirical literature on the tourism-economic growth relationship using panel causality techniques. For this purpose Dumitrescu-Hurlin (DH) test is used. Lopez and Weber (2017) formalize the regression to test for the causality as follows:

$$y_{i,t} = \alpha_i + \sum_{k=1}^{K} \beta_{ik} y_{i,t-k} + \sum_{k=1}^{K} \mu_{ik} x_{i,t-k} + \varepsilon_{i,t} \qquad (1)$$

where $x_{i,t}$ and $y_{i,t}$ are the explanatory variables and outcome respectively, i denotes individual while t denotes time. The order of lag is denoted by K. This test assumes the balanced panel. The procedure is explained in Granger (1969). The null hypothesis assumes no causality in the panel for all i and can be formalized as follows:

$$H_0: \mu_{i1} = \cdots = \mu_{iK} = 0 \quad for\ i = 1, \dots, N. \qquad (2)$$

Since the focus of the research is the causality between tourism sector and economic growth, these two variables are of key interest. Tourism development is approximated using international tourism receipts in current US\$ per capita (*TOUR*). This industry is found to be a significant improvement factor of economic growth. In addition, it is considered to be a great revenue source promoting the protection of environment as well as the peace in multicultural areas. This is due to the fact that tourism has stimulated many industries such as food, aviation, logistics, entertainment etc. (Wang et al., 2012). Real GDP per capita in current US\$ (*GDP*) is used as a proxy of economic growth.

4. Empirical Results and Interpretation

Lopez and Weber (2017) emphasize that DH assumes the stationarity of variables. This is why the first step in this analysis is testing for the stationarity applying Harris–Tsavalis unit root test. H_0 states: panels contain unit roots while H_1 indicates that panels are stationary. Table 1 summarizes the obtained results for 113 observed countries (Appendix 1) over the period 1995-2015.

Table 1: Harris–Tsavalis Unit Root Test

	Statistic	z	p-value	Number of panels	Number of periods
TOUR	1.034	12.834	1.000	113	21
GDP	0.914	3.813	0.999	113	21
lnTOUR	-0.021	-63.117	0.000	113	21
lnGDP	-0.128	-70.804	0.000	113	21

Source: Authors

The obtained results indicate the presence of unit roots in both variables (for a 5% significance level). Due to these issues variables are expressed in natural logarithmic forms. Variables expressed in natural logarithmic forms are reported to be stationary (Table 1).

After correcting for unit root issue, DH procedure is conducted to test for the causal relationship between tourism and economic growth. The rejection of null hypothesis suggests the Granger causal relationship between variables of interest. Table 2 summarizes the obtained results.

Table 2: DH Granger Non-Causality Test Results

Dependent variable	W-bar	Z-bar	Z-bar tilde	Lag order
lnGDP	3.913	21.898 (0.000)*	16.619 (0.000)*	1
lnTOUR	2.808	13.589 (0.000)*	10.011 (0.000)*	1
lnGDP	5.030	16.106 (0.000)*	10.384 (0.000)*	2
lnTOUR	4.807	14.918 (0.000)*	9.525 (0.000)*	2
lnGDP	6.822	16.587 (0.000)*	8.557 (0.000)*	3
lnTOUR	6.705	16.078 (0.000)*	8.239 (0.200)*	3

Note: * - p value
Source: Authors

In the case when the lag order is not specified, DH test by default introduces a single lag. The findings suggest that the null hypothesis cannot be rejected in the case when TOUR or GDP are taken as outcome variables. Hence, tourism is found to Granger cause the growth of economy. Apart from this, the results also suggest that many tourists are attracted by the level of development of potential destination. Therefore, the relationship between variables of interest is found to be bidirectional. These results are supported by Seetanah (2011), Chou (2013), Ohlan (2017). In order to test the stability of the results, we use 2 and 3 lags, respectively. The obtained results confirm the subsistence of their bidirectional relationship.

In addition, the selected countries are divided into three income groups to test whether income disparities influence aforementioned findings. Table 3 summarizes the results of Harris–Tsavalis unit root test:

Table 3: Harris–Tsavalis Unit Root Test

	Low-income (5 countries)			Middle-income (66 countries)			High-income (42 countries)		
	Statistic	z	p-value	Statistic	z	p-value	Statistic	z	p-value
TOUR	0.492	-5.885	0.000	1.008	8.322	1.000	1.055	8.763	1.000
GDP	0.646	-3.446	0.000	0.887	1.317	0.906	0.906	1.950	0.974
lnTOUR				0.743	-6.953	0.000	0.752	-5.109	0.000
lnGDP				-0.134	-54.433	0.000	-0.149	-44.058	0.000

Source: Authors

The obtained results indicate the presence of unit roots in both variables (for a 5% significance level) in the case of middle- and high-income countries. Due to these issues variables are expressed in natural logarithmic forms. Variables expressed in natural logarithmic forms are reported to be stationary (Table 3).

After correcting for unit root issue, DH procedure is conducted to test for the causal relationship between tourism and economic growth. Table 4 summarizes the obtained results.

Table 4: DH Granger Non-Causality Test Results

Dependent variable	Low-income (5 countries)				Middle-income (66 countries)				High-income (42 countries)			
	W-bar	Z-bar	Z-bar tilde	Lag order	W-bar	Z-bar	Z-bar tilde	Lag order	W-bar	Z-bar	Z-bar tilde	Lag order
ln GDP	4.448	5.452 (0.000)*	4.168 (0.000)*	1	4.230	18.557 (0.000)*	14.150 (0.000)*	1	3.351	10.775 (0.000)*	8.084 (0.000)*	1
ln TOUR	2.081	1.709 (0.087)*	1.192 (0.233)*	1	3.067	11.889 (0.000)*	8.847 (0.000)*	1	2.081	5.975 (0.000)*	22.798 (0.000)*	1
ln GDP	5.434	3.840 (0.000)*	2.512 (0.012)*	2	5.184	12.935 (0.000)*	8.389 (0.000)*	2	4.740	8.879 (0.000)*	5.650 (0.000)*	2
ln TOUR	6.538	5.073 (0.000)*	3.405 (0.001)*	2	6.538	11.944 (0.000)*	7.672 (0.000)*	2	4.391	7.749 (0.000)*	4.831 (0.000)*	2
ln GDP	10.651	6.985 (0.000)*	3.985 (0.000)*	3	6.693	12.247 (0.000)*	6.271 (0.000)*	3	6.569	9.443 (0.000)*	4.799 (0.000)*	3
ln TOUR	8.308	4.845 (0.000)*	2.647 (0.001)*	3	6.122	10.354 (0.000)*	5.088 (0.000)*	3	7.430	11.720 (0.000)*	6.222 (0.001)*	3

Note: * - p value
Source: Authors

The obtained findings (Table 4) indicate that tourism is confirmed to be Granger determinant of economic growth. The obtained results confirm aforementioned bidirectional positive relationship between tourism and economic growth for low-, middle- as well as high-income countries in the case 2 and 3 lags are introduced respectively. Therefore, tourism and economic growth are reported to reinforce each other suggesting a bidirectional positive effect.

5. Conclusion

This research aims to conduct a causality analysis of the mutual relationship between tourism and economic growth using the panel data of 113 countries while controlling for income disparity. The observed period is between 1995 and 2015. For this purpose, panel Granger causality method is

used. This research aims to fill in this gap in literature by applying Granger panel causality approach, by using the most recent available data and by controlling for the impact of income disparity. The findings suggest that the null hypothesis cannot be rejected in the case when TOUR or GDP are taken as outcome variables. Hence, tourism is found to Granger cause the growth of economy. Apart from this, the results also suggest that many tourists are attracted by the level of development of potential destination. Therefore, the relationship between variables of interest is found to be bidirectional. In order to test the stability of the results, we use 2 and 3 lags, respectively. The obtained results confirm the existence of bidirectional relationship. In addition, the selected countries are divided into three income groups to test whether income disparities influence aforementioned findings. The obtained findings indicate that tourism is confirmed to Granger improvement factor of economic growth. The obtained results confirm aforementioned bidirectional positive relationship between tourism and economic growth for low-, middle- as well as high-income countries in the case 2 and 3 lags are introduced respectively. Therefore, tourism and economic growth are reported to reinforce each other suggesting a bidirectional positive effect.

Appendix 1: List of the countries

	Croatia	Iraq	Morocco	Sri Lanka
Algeria	Cuba	Ireland	Namibia	Sudan
Argentina	Cyprus	Italy	Nepal	Sweden
Armenia	Czech Republic	Jamaica	Netherlands	Switzerland
Australia	Denmark	Japan	New Zealand	Syrian Arab
Austria	Dominican	Jordan	Nicaragua	Republic
Bahamas, The	Republic	Kazakhstan	Nigeria	Thailand
Bahrain	Ecuador	Kenya	Norway	Trinidad and
Bangladesh	Egypt, Arab Rep.	Korea, Rep.	Oman	Tobago
Barbados	Estonia	Kuwait	Pakistan	Tunisia
Belarus	Ethiopia	Kyrgyz Republic	Panama	Turkey
Belgium	Fiji	Lao PDR	Paraguay	Uganda
Brazil	Finland	Latvia	Peru	Ukraine
Bulgaria	France	Lebanon	Philippines	United Arab
Cambodia	Germany	Libya	Poland	Emirates
Cameroon	Ghana	Lithuania	Portugal	United Kingdom
Canada	Greece	Luxembourg	Romania	United States
Central African	Honduras	Macedonia, FYR	Russian	Uruguay
Republic	Hong Kong SAR,	Malaysia	Federation	Venezuela, RB
Chile	China	Mali	Senegal	Yemen, Rep.
China	Hungary	Malta	Sierra Leone	Zimbabwe
Colombia	Iceland	Mauritius	Singapore	
Congo, Rep.	India	Mexico	Slovak Republic	
Costa Rica	Indonesia	Moldova	Slovenia	
Cote d'Ivoire	Iran, Islamic Rep.	Mongolia	Spain	

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WHAT DOES ENTREPRENEURSHIP HAVE IN COMMON WITH GAMBLING?

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Abstract

Individuals with different types of personalities have different ways of perceiving risk. As willingness to take risk is one of the most important trait in the entrepreneurial mindset, this study applied a survey research method to examine the influence of personality traits and risk propensity on (a) risk perception (gambling domain) and (b) entrepreneurial intentions. In order to test the conceptual model and proposed hypotheses, we collected data from 245 students in Bosnia and Herzegovina. Our first model tested whether risk propensity and personality traits are related to risk perception. By using structural equation modeling, we also examined whether risk propensity has a mediating role on the relationship between personality traits and risk perception in gambling. Our second model is specified in a similar way as the first one, but instead of gambling risk perception, we employed entrepreneurial intention construct. Our ultimate goal was to test whether same personality traits are associated with risk perception and entrepreneurial intentions. The findings of this research contribute to the literature on the importance of gaining knowledge about risk assessment among students and shed some light on the necessity of creating a supportive environment for risk decision making of future entrepreneurs.

Keywords: The Big Five, personality traits, Risk propensity, Risk perception,   Entrepreneurial intention

JEL classification: L26

1. Introduction

The risk propensity is a tendency of an individual to take or avoid risks (Sitkin & Weingar, 1995). This individual trait is not long-lasting, i.e. it can change over time. Risk perception is assessment about probability that perceived risk event can occur, how controllable is a risk and how confident an individual is about risk estimations (Sitkin & Weingar, 1995). Previous research identified risk propensity as a critical explaining factor, but the results are not consistent across studies (see Wang, Xu, Zhang, & Chen, 2016, pp. 1296). Therefore, we start by testing the relationship between risk propensity and risk perception. In addition to risk propensity, we also included personality traits which might contribute to explanation of risk perception. Since risk perception is an important part of entrepreneurs' intentions and actual behaviours of entrepreneurs, in this paper we tested whether risk propensity is positively associated with entrepreneurial intentions; assuming that gambling risk perception and entrepreneur intentions represent different but similar concepts. Both risk perception and entrepreneurial intention are not actual behaviours, but perception about existence of risk and opportunity in different environments (gambling and business environment). Our ultimate goal is to examine whether same personality traits are associated with risk perception in gambling and entrepreneurial intentions. We begin by providing short overview of big five personality traits. We also provide definition of two key determinants of risky-decision making behavior: risk propensity and risk perception. Afterwards, brief overview of literature is provided in order to derive research questions and hypotheses. Finally, we present sample, data, the model and conclusions.

2. Theoretical Background

In this theoretical background section we provide most important definition of constructs and concepts used in the paper, as well as overview of existing relationships between personality traits, risk propensity, and risk perception.

2.1. Big Five Personality Traits

Five Factor Model (FFM) or Big Five Model (BFM) of personality has provided a framework for a variety of personality variables into a parsimonious and relatively comprehensive set of personality constructs. Those five broad personality dimensions are Emotional Stability, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness, and they tend to capture the basic structure of human personality. These dimensions are often represented as acronym OCEAN or CANOE.

Openness to experience reflects the degree of intellectual curiosity and creativity, and individuals with high openness can be perceived as unpredictable or with lack of focus, and it is more likely for that person to engage in risky behaviour. On the other hand, those individuals with low openness seek to gain fulfillment through perseverance and are characterized as pragmatic and data-driven, sometimes even perceived to be dogmatic and closed-minded. Conscientiousness represents tendency to be organized and dependable, it shows self-discipline, allowing individuals to act dutifully while engaging in planned rather than spontaneous behavior. High conscientiousness is often perceived as stubbornness and obsession, while low conscientiousness means flexibility and spontaneity. Extraversion (high) reflects energetic behaviour, positive emotions, assertiveness, sociability and talkativeness, while low extraversion trait (introverted people) causes a reserved, reflective personality. Agreeableness (high) is

tendency to be compassionate and cooperative, while people with low agreeableness are often competitive or challenging. Neuroticism or emotional stability is a trait that allows individuals to experience unpleasant emotions more easily. For example, high stability manifests itself as a stable and calm personality, while low stability manifests itself as the reactive and excitable personality often found in dynamic individuals.

One very important and yet very controversial trait for entrepreneurial research is risk propensity (Miner & Raju, 2004; Rauch & Frese, 2007; Zhao, Seibert, & Lumpkin, 2010). Some scholars (e.g., Nicholson, Fenton-O'Creevy, Soane, & Willman, 2005) suggest that risk propensity is a compound personality trait reflecting a specific combination of scores on all five dimensions of personality (namely, high extraversion, openness, and emotional stability combined with low agreeableness and low conscientiousness). Others argue that risk propensity forms a separate sixth dimension of personality not captured by the Big Five (Jackson, 1994; Paunonen & Jackson, 1996). Because of the theoretical importance of risk propensity as a trait, we include it as an additional personality construct outside of the Big Five, as it was in some previous research (eg. Zhao et al., 2010, Wang et al., 2016).

2.2. Risk propensity

Generally, individuals differ in their ways of dealing with risks (Lion, Meertens, & Bot, 2002). Risk propensity, also seen as a risk-taking tendency can be defined as "the tendency of a decision maker either to take or to avoid risks" (Sitkin & Pablo, 1992: p.12). Also, risk propensity may be seen as an individual trait which can change over time, depending on the experience gained (Sitkin & Weingart, 1995). Individuals with higher risk propensity deal more comfortable with risky situations and perceive the same situations as less risky than others.

Although individuals differ in their willingness to take a risk, there is a disagreement about the nature of this trait and the impact it has on decision-making (Keil, Wallace, Turk, Dixon-Randall, & Nulden, 2000). Some authors (Kogan & Wallach, 1964; Jackson, Hourany, & Vidmar, 1972; Keinan, Meir, & Gome-Nemirovsky, 1984) state that it is a general personality trait where individuals demonstrate constant tendencies around different situations. On the other hand, MacCrimmon & Wehrung (1985) found risk propensity to be a situationally-specific variable where risk propensity depends on a particular situation. For the purpose of our study, we use general scale for risk propensity developed by Meertens & Lion (2008). The reason is that it distinguishes itself from longer scales that measure risk taking across large number of domains and because it has been used mostly in student population.

Some other studies also includes risk propensity in explaining different phenomenon. For example, the results of Cui, Sun, Xiao, & Zhao (2016) provide evidence that risk propensity has a moderating effect on alertness to business ideas and entrepreneurial capabilities.

Table 1 summarizes the expected influence of personality traits on risk propensity based on the literature review of Wang et al. (2016)

Table 1. Personality traits and risk propensity

Personality trait	Description of individuals →	Risk propensity
Extraversion	Individuals with needs for sensation, excitement, ...	More inclined to seek the experience of risk taking
Agreeableness	Impulsive decision-makers	Engage in risky behavior
Conscientiousness	Individuals that focus on their own lives under circumstances of regulations and control	Low levels of risk propensity
Emotional Stability	Individuals that are less likely to be anxious	Less risk seeking
Openness to Experience	Individuals ignoring uncertainty change because of their impulsion and willfulness	More risky behaviour

Note: Based on the literature review of Wang et al. (2016).

2.3. Risk perception

In classical decision theory, risk is perceived as a variation in the distribution of possible outcomes, their likelihoods, and their subjective values (March & Shapira, 1987). In that sense Sjöberg, Moen, & Rundmo (2004: pp.8) define risk perception as the "subjective assessment of the probability of a specified type of accident happening and how concerned we are with the consequences. To perceive risk includes evaluations of the probability as well as the consequences of a negative outcome". For the measurement of risk perception most commonly used scale is the Domain-Specific-Risk-Taking (DOSPERT) scale developed by Weber, Blais, & Betz (2002). DOSPERT scale has been tested for reliability and validity in many studies (Blais & Weber, 2006; Harris & Jenkins, 2006). It allows researchers to perceive risk attitudes in five commonly encountered content domains: ethical, financial - further decomposed into gambling and investment, health/safety, social, and recreational decisions.

Although many factors may affect risk perception, Sitkin & Pablo (1992) particularly emphasize the influence of the risk propensity on risk perception. This relationship between risk propensity and risk perception has been proposed and supported many times in the past (Brockhaus, 1980; Vlek & Stallen, 1980; Schneider & Lopes, 1986). Different authors (Brockhaus, 1980; Vlek & Stallen, 1980; Sitkin & Weingart, 1995) argue that risk propensity, by influencing the relative prominence of situational threat or opportunity causes different, biased risk perceptions. In this context, people who are risk-averse will more appreciate negative than the positive consequences of the outcome. They attend to and weight potentially negative outcomes more heavily than positive outcomes. On the other hand, risk-seeking decision makers will appreciate more positive than negative effects of the outcome, overestimating the probability of gain relative to the probability of loss. Previous articles confirmed the proposed relationship. Sitkin & Weingart (1995) found that risk propensity has a significant negative relationship related to risk perception in the case of thirty-eight master's of business administration students. They conclude that when subjects reported higher levels of risk propensity, they also reported that they have perceived less risk in the situation. Byrne (2005) reported the same effect in the case of consumers evaluation of risk in financial products. Furthermore, risk propensity has a negative influence on risk perception of construction project managers (Wang, Zhao, Zhang, & Wang, 2015) and Chen, Zhang, Liu, & Hu (2015) confirm that there is a significant negative relationship between risk propensity and risk perception in bid/no-bid decision-making of construction projects.

Table 2 summarizes the expected influence of personality traits on risk perception based on the literature review of Wang et al. (2016).

Table 2. Personality traits and risk perception

Personality trait	Description of individuals →	Risk perception
Extraversion	Extroverts can accept deviant behaviors more easily than introverts; they engage in multiple, risky health behaviors; they are seeking sensation	Low level or risk perception
Agreeableness	Individuals with high agreeableness show more sympathy and empathy to others; they choose safer solutions to reduce uncomfortable feelings	High level of risk perception
Conscientiousness	Individuals that focus on their own lives under circumstances of regulations and control	High level of risk perception
Emotional Stability	Individuals that are less likely to be anxious or to demonstrate risky or impulsive actions	High level of risk perception
Openness to Experience	Individuals that can accept new things more easily and have more tolerance to uncertainty	Low level or risk perception

Note: Based on the literature review of Wang et al. (2016).

2.4. Entrepreneurial intention

A starting point for every rational and important action is the intention. An often used example of intention is found in entrepreneurship: cognitive states prior decision to start a business, which is not an ad hoc activity. It is a cognitive and time-consuming process, where business emergence is just a top of an iceberg. Individuals with higher intentions to start businesses have to make many creative simulations and administrative steps in order to reach the goal and to make sure startups will emerge on the market. Thus, entrepreneurial activity is intentional, resulting from motivation and cognition (Frese, 2009; Kautonen, Van Gelderen, & Tornikoski, 2013; Kolvereid & Isaksen, 2006; Krueger, 2005). Social psychology scholars define intentions as cognitive states immediately prior to the decision to act (Ajzen, 1991; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). Entrepreneurial intentions are the single most important predictor of individual's later entrepreneurial behavior. This construct is an essential part of every conceptual model that explains business formation.

Through the history of entrepreneurial thought, the entrepreneur is perceived as uncertainty-bearer (Barreto, 1989). In that context, entrepreneur is someone who should overcome uncertainty in order to sell products on the market, or make decisions about future development in a uncertain environment. Besides being uncertainty-bearer, several other roles can be attributed to entrepreneurs: coordinator, innovator and arbitrageur. While uncertainty does not guarantee success of the firm, the results of Boermans & Willebrands (2017) suggest that "entrepreneurs with higher perception of risk in general earn higher revenue."

For the purpose of this study we use only the gambling domain of risk perception, since it is closest to entrepreneurial context and therefore it has strongest link to entrepreneurial intentions. The reason for that is because students often identify risk situations as gambling (March & Shapira, 1987). Therefore, we follow the insight from March & Shapira who stated

that (1987: pp.1413) "...to a student of statistical decision theory, the distinction may be obscure since the idea of decision making under risk in that tradition is paradigmatically captured by a vision of betting, either against nature or against other strategic actors. From that perspective, the choice of a particular business strategy depends on the same general considerations as the choice of a betting strategy in a game of poker".

Based on the previous literature review and discussion, the following research questions emerged:

- Are the same personality traits associated with risk perception in gambling and entrepreneurial intentions?
- Does risk propensity influence gambling risk perception and entrepreneurial intention?
- Does the risk propensity have a mediating role on the relationship between personality traits and risk perception in gambling?
- Does the risk propensity have a mediating role on the relationship between personality traits and entrepreneurial intention?

3. Research Method

In this section, we provide description of the sample, variables used in the model and model specification.

3.1. Sample

In order to provide answers to research questions, we collected data from the student population. Our sample plan is based on a convenience sample. Students were asked to fill out the printed questionnaire in order to maximize return rates. A total of 245 students completed the survey. Our sample consists of the students of various ages (Table 3). The largest proportion of students belongs to the 22-26 age group (33%), followed by 18-21 age group (31%) and 36 years and older (16%). Most students are involved in business studies (35%), while students in other types of studies were almost equally represented in the sample: security studies (21%), energetics (6%), occupational health and safety and fire protection (15%) and traffic engineering (23%). Male students are more represented in the sample (154 male and 85 female students).

Table 3. Descriptive statistics of the sample

Age	Female	Male	Total
18-21	35 (41%)	40 (26%)	75 (31%)
22-26	20 (24%)	58 (38%)	78 (33%)
27-30	9 (11%)	14 (9%)	23 (10%)
31-35	6 (7%)	19 (19%)	25 (10%)
36+	15 (18%)	23 (15%)	38 (16%)
Total	85 (100%)	154 (100%)	239 (100%)

Note: Six students did not provide information about their age group and/or gender

In order to provide useful descriptive statistics, we calculated average values for four items in the gambling risk perception scale (Figure 1). Majority of the students (77%) claim that they would never engage in gambling activities, while 23% indicate that likelihood of engaging in gambling activities or behaviors exists to some extent.

Figure 1. Histogram of risk perception in gambling
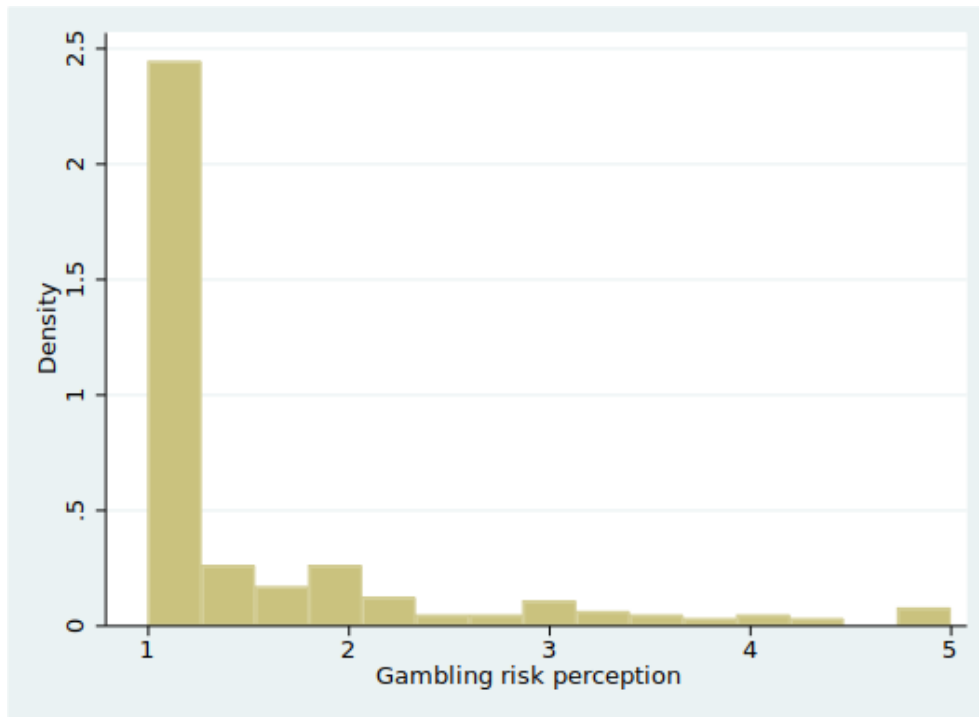
Note: Gambling risk perception (average value of four items)
Scale from 1 ("I would never do it") to 5 ("I would always do it")
Source: Author's illustration

We also examined the correlation between risk perception in gambling and entrepreneurial intentions (Figure 2). There is no strong correlation between these two constructs ($r = 0.05$, $n = 244$, $p = 0.48$). As it can be seen from Figure 2, low-risk perception in gambling can be associated both with low and high entrepreneurial intention. If we exclude all respondents with gambling value less than 2, Pearson correlation coefficient increases ($r = 0.14$, $n = 57$, $p = 0.31$). There is a moderate correlation between these two variables if we include only those respondents with gambling risk perception value equal to or larger than 3 ($r = 0.40$, $n = 26$, $p = 0.04$). In the last case, there are only 26 respondents included in the analysis. By calculating correlation coefficients, we tested whether the moderate association between these two variables exists for the respondents who positively perceive gambling risk. Due to the small sample size, the results should be interpreted with caution.

Figure 2. Correlation between gambling risk perception and entrepreneurial intentions
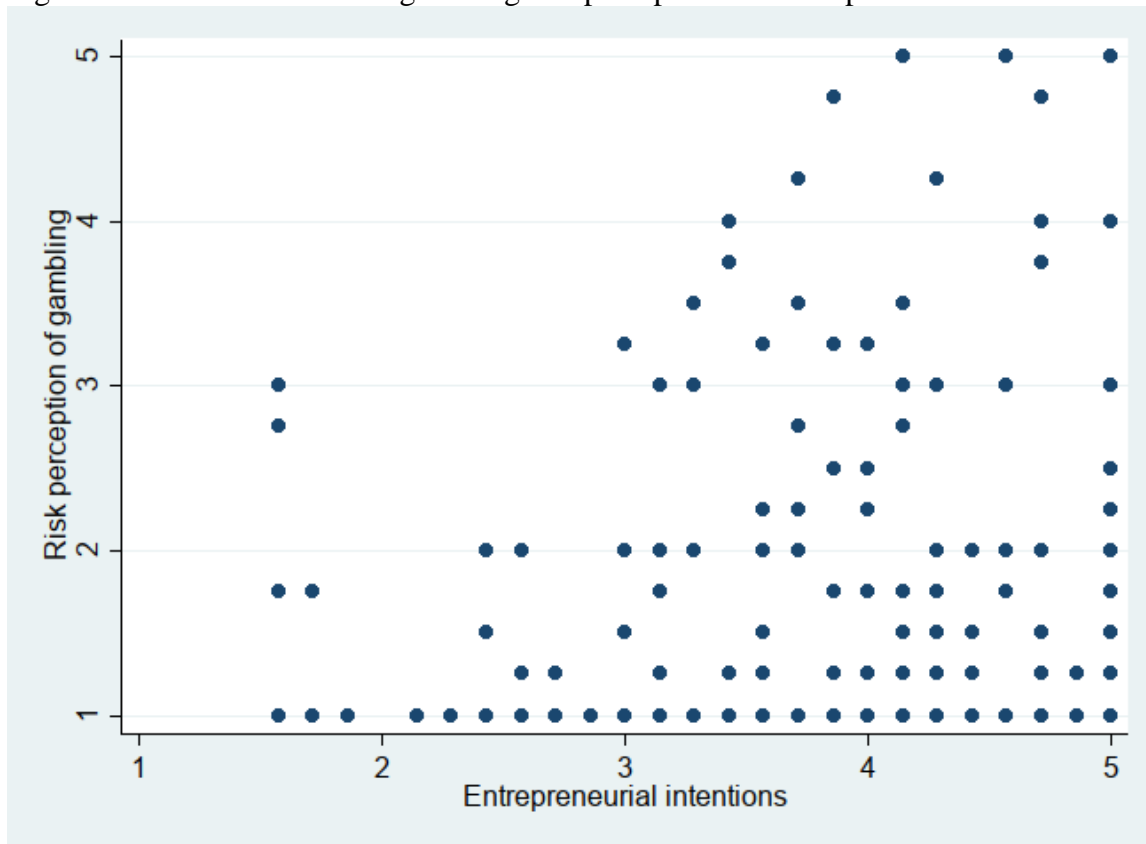
3.2. Variables in the model

In this study, we used four scales: Risk propensity (RPRO), Risk Perception (RPER), Five-Factor Model (FFM) of personality and five items scale for measuring entrepreneurial intention. The risk propensity scale was adopted from Meertens & Lion (2008): a seven-items form of risk propensity scale where respondents had to indicate the extent to which they agree or disagree with statements on a nine-point Likert scale. Risk propensity is a variable that is not directly observed, i.e. latent variable. Risk perception also represents a latent construct taken from Weber et al. (2002). Respondents had to indicate a likelihood of engaging in 40 different activities or behaviors on a five-point Likert scale. The underlying factors of risk perceptions are ethical, investment, gambling, health/safety, recreational, and social items. As already explained, in this paper we focus only on gambling risk perception. We used relatively short measures of the Five-Factor Model (FFM) of personality, with two items per dimension. This short form was previously validated by Gosling, Rentfrow, & Swann (2003). Finally, Liñán & Chen's (2009) Likert type scale with five items for measuring entrepreneurial intention was used.

3.3. Model and Hypotheses

This study applied a survey research method to examine the relationships between personality traits, risk propensity and gambling risk perception. Our hypotheses are developed based on the reasoning of Wang et al. (2016). However, we modified the model in order to include only risk perception in gambling. As explained by Cunningham & Lischeron (1991), risk-taking is often associated with entrepreneurs, but they also noted that "...risk-taking is not a desire to try one's gambling skills in Las Vegas. Instead, entrepreneurs prefer to take moderate risks in situations where they have some degree of control or skill in realizing a profit." (pp.49) Gambling risk perception, the latent construct taken from Weber et al. (2002), contains such questions that reflect taking moderate risks in gambling. In addition to this, "the choice of a particular business strategy depends on the same general considerations as the choice of a betting strategy in a game of poker" (March & Shapira, 1987, pp.1413). Our first model tests whether risk propensity and personality traits are associated with risk perception in gambling. By using structural equation modeling, we also examine whether risk propensity has a mediating role on the relationship between personality traits and gambling risk perception. Our second model is specified the same as the first one, but instead of risk perception in gambling, we employed entrepreneurial intentions. Our ultimate goal was to test whether same personality traits are associated with gambling risk perception and entrepreneurial intentions.

Figure 3. Model 1 Specifications
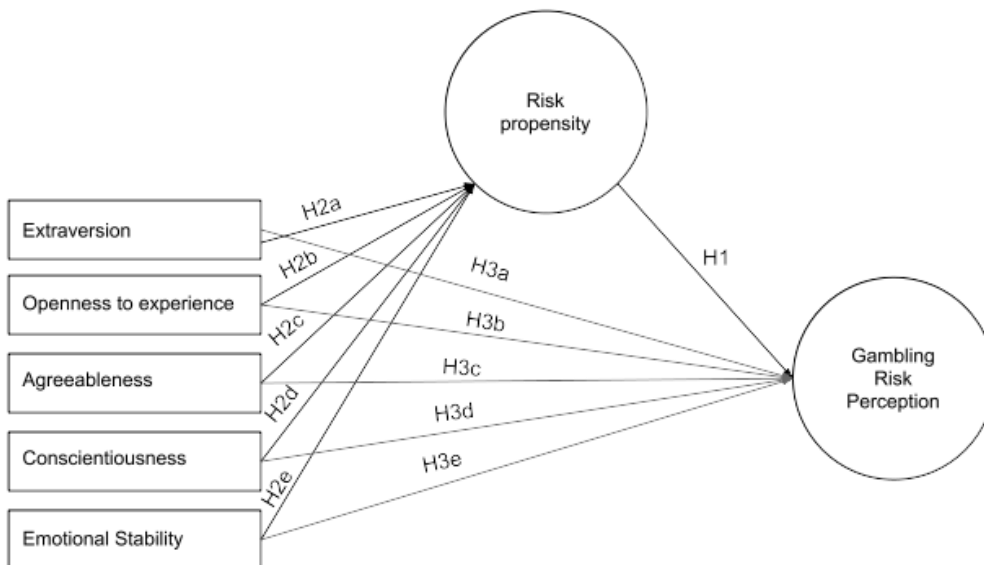
Source: Author's illustration

Based on the existing literature and our discussion, we define the following hypotheses (see Figure 3):

H1: Risk propensity is negatively associated with risk perception in gambling.

H2a. Extraversion is positively related to risk propensity
H2b. Openness to Experience is positively related to risk propensity

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H2c. Agreeableness is negatively related to risk propensity.
H2d. Consciousness is negatively related to risk propensity.
H2e. Emotional Stability is negatively related to risk propensity.

H3a. Extraversion is negatively related to risk perception in gambling
H3b. Openness to Experience is negatively related to risk perception in gambling
H3c. Agreeableness is positively related to risk perception in gambling.
H3d. Consciousness is positively related to risk perception in gambling.
H3e. Emotional Stability is positively related to risk perception in gambling.

H4: The risk propensity has a mediating role on the relationship between personality traits and risk perception in gambling.

Figure 4. Model 2 Specifications
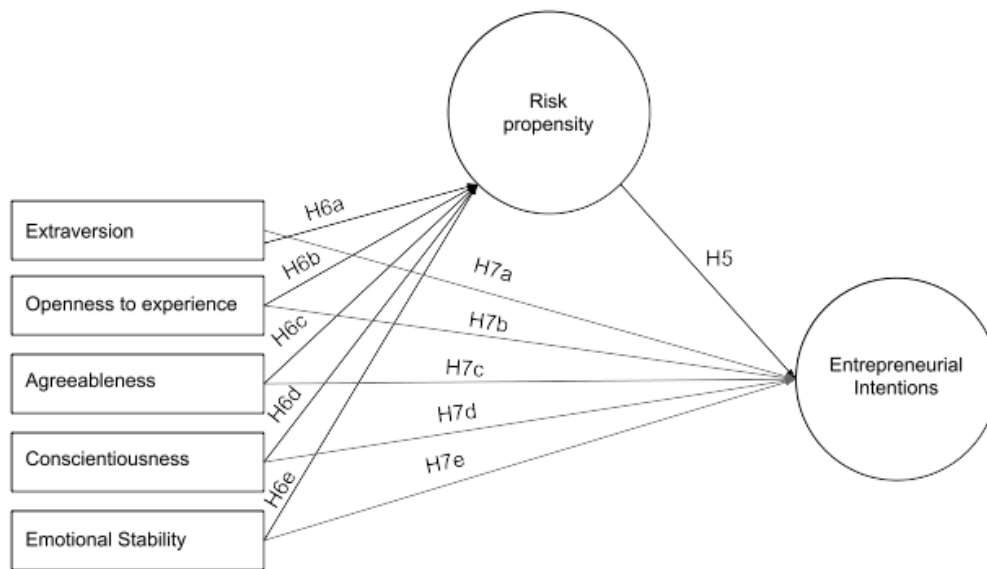
Source: Author's illustration

Based on the previous discussion that gambling risk perception and entrepreneurial intention share some common characteristics, our following hypotheses test whether personality traits and risk propensity are related to entrepreneurial intention. Since the expected effect of risk propensity on gambling risk perception is negative (individuals with higher risk propensity should perceive gambling as more attractive; therefore reducing gambling risk perception), the effect of risk propensity on entrepreneurial intention is expected to be positive (higher risk propensity should increase individual entrepreneurial intention). Similar reasoning was used for defining the hypotheses that test effect of personality traits on entrepreneurial intentions.

H5: Risk propensity is positively associated with entrepreneurial intentions.

H6a. Extraversion is positively related to risk propensity

H6b. Openness to experience is positively related to risk propensity
H6c. Agreeableness is negatively related to risk propensity.
H6d. Consciousness is negatively related to risk propensity.
H6e. Emotional Stability is negatively related to risk propensity.

H7a. Extraversion is positively related to entrepreneurial intentions.
H7b. Openness to experience is positively related to entrepreneurial intentions.
H7c. Agreeableness is negatively related to entrepreneurial intentions.
H7d. Consciousness is negatively related to entrepreneurial intentions.
H7e. Emotional Stability is negatively related to entrepreneurial intentions.

H8: The risk propensity has a mediating role on the relationship between personality traits and entrepreneurial intentions.

4. Results and Discussion

First we assessed measurement model reliability and validity. The confirmatory factor analysis (CFA) results indicate that the measurement models fit well the data (Table 4). Two items with factor loading lower than 0.4 were removed from risk propensity construct and remaining four items were included in the further analysis.

Table 4. CFA results for measurement models

Construct	Number of items	RMSEA	SRMR	CFI
Risk propensity	4	0.080	0.023	0.987
Risk perception (gambling)	4	0.084	0.019	0.990
Entrepreneurial intention	5	0.068	0.027	0.959

The convergent validity of measurement models is provided in Table 5. The reliability estimates all exceed 0.7. The average variance extracted (AVE) estimates exceed 0.5 for the constructs (gambling risk perceptions and entrepreneurial intention), which is accepted level of AVE. The average variance extracted was lower than 50 percent for the risk propensity construct. We considered removing one item with loading lower than 0.5. However, while AVE increased above required 0.5, results from subsequent structural equation model did not change. Previous studies (Hult et al., 2005; Lee et al., 2004) also included constructs with the value of AVE above 0.4. In addition, the levels of square root of the AVE for each construct is greater than the correlation involving the constructs (Appendix 1).

Table 5. Items of measurement model 1 with loadings, t-values, CR and AVE values

Model 1							
Construct	Code	Indicator	St. loadings	t-value	CR	AVE	Cronbach's Alpha
Risk propensity	RP1	Safety first	0.69	15.32	0.74	0.43	0.75
	RP2	I do not take risks with my health	0.84	20.59			
	RP3	I prefer to avoid risks.	0.67	14.04			
	RP5	I really dislike not knowing what is going to happen	0.43	6.85			
Risk perception (gambling)	GRP1	Betting a day's income at the horse races.	0.62	12.38	0.80	0.50	0.82
	GRP2	Betting a day's income at a high stake poker game.	0.73	16.96			
	GRP3	Betting a day's income on the outcome of a sporting event (e.g. baseball, soccer, or football).	0.70	15.86			
	GRP4	Gambling a week's income at a casino. (G)	0.78	19.64			
Entre-preneurial intention	EI1	I am ready to do anything to be an entrepreneur	0.82	31.00	0.92	0.69	0.91
	EI2	My professional goal is to become an entrepreneur	0.86	39.74			
	EI3	I will make every effort to start and run my own firm	0.89	47.05			
	EI4	I am determined to create a firm in the future	0.87	42.01			
	EI6	I have the firm intention to start a firm someday	0.71	19.64			

As expected, risk propensity is negatively associated with risk perception in gambling (Table 6). Therefore, our H1 is supported. Only emotional stability is related to risk propensity. However, the coefficient is positive, not negative as expected. Other personality traits are not related to risk propensity (H2a, H2b, H2c and H2d not supported). Openness to experience is negatively related to gambling risk perception (H3b supported), while we have not found that other personality traits are directly related to risk perception in gambling (H3a, H3b, H3c and H3d).

Table 6. Structural equation modeling results (Model 1)

Standardized	Coef.	OIM Std. Err	z	P>|z|	[95% Conf. Interval]	
GAMBLING ←						
Risk propensity	-0.16	0.08	-1.87	0.061	-0.32	0.01
Extraversion	-0.03	0.08	-0.38	0.704	-0.18	0.12
Agreeableness	-0.10	0.08	-1.28	0.202	-0.26	0.06
Conscientiousness	-0.09	0.08	-1.12	0.262	-0.25	0.07
Emotional Stability	-0.12	0.09	-1.39	0.165	-0.29	0.05
Openness to exp.	-0.18	0.08	-2.27	0.023	-0.34	-0.02
RISK PROPENSITY ←						
Extraversion	0.01	0.08	0.15	0.882	-0.14	0.17
Agreeableness	0.06	0.09	0.76	0.449	-0.10	0.23
Conscientiousness	-0.08	0.09	-0.98	0.327	-0.25	0.08
Emotional Stability	0.29	0.08	3.44	0.001	0.12	0.45
Openness to exp.	0.12	0.08	1.36	0.174	-0.05	0.28

As indicated in Table 7, openness to experience is the only personality trait that was found to affect gambling risk perception directly. We found no significant indirect effects of personality traits on gambling risk perception. Therefore, H4 was not supported. The risk propensity does not have a mediating role on the relationship between personality traits and risk perception in gambling.

Table 7. Test of indirect effects on gambling risk perception

	Total Effect		Direct Effect		Indirect Effect	
	Beta	P values	Beta	P values	Beta	P values
Extraversion	-0.01	0.69	-0.01	0.70	-0.00	0.88
Agreeableness	-0.06	0.17	-0.05	0.21	-0.01	0.48
Conscientiousness	-0.04	0.34	-0.05	0.27	0.01	0.39
Emotional Stability	-0.08	0.05	-0.06	0.17	-0.02	0.11
Openness to exp.	-0.10	0.02	-0.10	0.03	-0.01	0.28

Risk propensity is positively associated with entrepreneurial intentions (Table 8). Therefore, our H5 is supported. None of the personality traits are related to entrepreneurial intention (H7a, H7b, H7c, H7d and H7e not supported). Similar to the results of the model where we used gambling risk perception, the second model confirms that only emotional stability is positively related to risk propensity. Other personality traits are not related to risk propensity of students in Bosnia and Herzegovina (H6a, H6b, H6c and H6d not supported).

Table 8. Structural equation modeling results (Model 2)

Standardized	Coef.	OIM Std. Err	z	P>|z|	[95% Conf. Interval]	
ENTREPRENEURIAL INTENTION ←						
Risk propensity	0.17	0.08	2.10	0.035	0.01	0.33
Extraversion	0.06	0.09	0.66	0.508	-0.11	0.22
Agreeableness	-0.04	0.10	-0.39	0.694	-0.23	0.16
Conscientiousness	0.09	0.10	0.99	0.324	-0.09	0.28
Emotional Stability	-0.09	0.10	-0.99	0.324	-0.28	0.09
Openness to exp.	0.09	0.10	0.98	0.328	-0.09	0.28
RISK PROPENSITY ←						
Extraversion	0.01	0.10	0.07	0.943	-0.18	0.19
Agreeableness	0.09	0.11	0.80	0.421	-0.13	0.31
Conscientiousness	-0.10	0.11	-0.92	0.358	-0.31	0.11
Emotional Stability	0.34	0.11	3.19	0.001	0.13	0.55
Openness to exp.	0.14	0.11	1.31	0.192	-0.07	0.36

As indicated in Table 9, none of the Big Five personality traits was found to affect entrepreneurial intention directly. However, we have found significant indirect effect of emotional stability on gambling risk perception (significant at 0.10 level). Therefore, H8 was partly substantiated. As such, risk propensity mediated the positive effects on entrepreneurial intentions (Beta = 0.05, p=0.095).

Table 9. Test of indirect effects on entrepreneurial intention

	Total Effect		Direct Effect		Indirect Effect	
	Beta	P values	Beta	P values	Beta	P values
Extraversion	0.03	0.75	0.02	0.76	0.00	0.90
Agreeableness	-0.03	0.77	-0.04	0.65	0.02	0.40
Conscientiousness	0.10	0.29	0.11	0.21	-0.01	0.36
Emotional Stability	-0.04	0.65	-0.09	0.33	0.05	0.10
Openness to exp.	0.15	0.11	0.13	0.17	0.02	0.24

Assessment of overall models fit is provided in Table 10. Both models have good fits.

Table 10. Assessment of Overall Model Fit

Assessment of Overall Model Fit	Model 1	Comment	Model 2	Comment
Root Mean Square Error of Approximation (RMSEA)	0.040	< 0.05 good fit	0.042	< 0.05 good fit
Comparative fit index (CFI)	0.967	>.95 good fit	0.973	>.95 good fit
Tucker-Lewis index (TLI)	0.954	>.95 good fit	0.964	>.95 good fit
Standardized root mean squared residual (SRMR)	0.041	<.05 acceptable fit	0.037	<.05 acceptable fit

5. Discussions and Conclusions

This study examined the relationships between (a) personality traits, risk propensity and gambling risk perception and (b) personality traits, risk propensity and entrepreneurial intentions. By using structural equation modeling, we also examined whether risk propensity has a mediating role on the relationship between (a) personality traits and gambling risk perception and (b) personality traits and entrepreneurial intentions. Our ultimate goal was to test whether same personality traits are associated with gambling risk perception and entrepreneurial intentions.

As expected, risk propensity is negatively associated with risk perception in gambling. Individuals with higher risk propensity should perceive gambling as more attractive; therefore reducing gambling risk perception. Previous pieces of research identified risk propensity as a critical explaining factor, but the results are not consistent across studies (see Wang et al., 2016, pp. 1296). The negative result from our study confirms that students that are more willing to take a risk (i.e. higher level of risk propensity) focus on gains rather than on losses which eventually leads to a reduction in gambling risk perception scores.

Openness to experience is negatively related to gambling risk perception, while no other personality traits were found to be related to perception of this risk type. Similar to our previous discussion regarding the relationship between risk propensity and gambling risk perception, openness to experience decreases gambling risk perception. Higher openness to experience reflects an individual's unpredictability or lack of focus, therefore leading to more risky behaviour and consequently lower perception of gambling risk behaviour. When it comes to risk propensity, we found that only emotional stability is positively related to it; not negatively as expected from Wang et al. (2016). A possible explanation of the results might be that emotionally stable persons have more rational approaches to risk management, allowing them to increase their risk propensities. Another possible explanation might be that risk preferences are not consistent across three decision domains: work, health, and personal finance. The findings of Soane & Chmiel (2005) show that "greater inconsistency of risk preferences across domains for the inconsistent group was predicted by high scores in neuroticism, openness, and conscientiousness, low scores in agreeableness, and by inconsistent risk perceptions and a tendency to consider payoffs and costs." (p.1787). Other personality traits are not found to be significantly related to risk propensity. As noted earlier, a possible explanation might be that that risk propensity is a compound personality trait reflecting a specific combination of scores on all five dimensions of personality (e.g., Nicholson et al., 2005). In addition to this, our results do not confirm that the risk propensity has a mediating role on the relationship between personality traits and risk perception in gambling. Our results might suggest that risk propensity and openness to experience reduce gambling risk perception because: (a) risk propensity captures most important explanatory variable that can lead to changes in risk perception in gambling; (b) however, individuals should also be ready to accept new experiences in order to engage into more risky behaviours.

Risk propensity is positively associated with entrepreneurial intentions. Higher risk propensity increases individual entrepreneurial intention. None of the Big Five personality traits was found to affect entrepreneurial intention directly. Similar to results from the first model, emotional stability is positively related to risk propensity. However, we found significant indirect effect of emotional stability on entrepreneurial intentions (significant at 0.10 level). As such, risk propensity mediated the positive effects on entrepreneurial intentions of emotional stability. As noted earlier, a possible explanation is that emotionally stable persons have more rational

approaches to risk management, allowing them to increase their risk propensities and consequently entrepreneurial intentions. However, these results should be interpreted with caution.

When we compare two models, following conclusions can be drawn: (a) risk propensity has significant effect on both gambling risk perception and entrepreneurial intentions; (b) openness to experience has direct effect on risk perception in gambling, while no personality traits affect entrepreneurial intention directly; (c) emotional stability is important predictor of risk propensity in both models; (d) the indirect effects of emotional stability on entrepreneurial intentions through risk propensity were significant, i.e. risk propensity mediated the positive effects on entrepreneurial intentions of emotional stability.

Policymakers could use these results in the following ways: (a) creating more supportive environment where students can increase their risk propensity, which consequently should increase the intention to start a business, and (b) providing appropriate entrepreneurial education that will increase self-confidence, allowing students to increase scores on their emotional stability traits.

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Appendix 1

Table 11a. Assessment of discriminant validity (Model 1)

Latent construct	Risk perception (gambling) (AVE = 0.50)
Risk propensity (AVE=0.43)	0.07[*]

Table 11b. Assessment of discriminant validity (Model 2)

Latent construct	Entrepreneurial intention (AVE = 0.69)
Risk propensity (AVE=0.43)	0.03[*]

[*] *Squared correlations among latent constructs*
Note: when AVE values > squared correlations among latent variables values there is no problem with discriminant validity

Table 12. Correlation between variables

		GPR*	EI*	RP*	EX	AG	CO	ST	OP
GRP*	Correlation	1.00							
	Sig.								
EI*	Correlation	0.05	1.00						
	Sig.	0.65							
RP*	Correlation	-0.18	0.15	1.00					
	Sig.	0.00	0.02						
EX	Correlation	-0.15	0.09	0.06	1.00				
	Sig.	0.02	0.15	0.36					
AG	Correlation	-0.21	-0.01	0.19	-0.07	1.00			
	Sig.	0.00	0.93	0.00	0.28				
CO	Correlation	-0.21	0.12	0.09	0.27	0.22	1.00		
	Sig.	0.00	0.07	0.18	0.00	0.00			
ST	Correlation	-0.28	0.08	0.30	0.15	0.45	0.43	1.00	
	Sig.	0.00	0.24	0.00	0.02	0.00	0.00		
OP	Correlation	-0.27	0.13	0.18	0.31	0.30	0.47	0.33	1.00
	Sig.	0.00	0.04	0.00	0.00	0.00	0.00	0.00	

[*] Average value of items representing a construct

Variable labels:
RP – risk propensity, GRP – Gambling risk perceptions, EI – Entrepreneurial intention, EX – Extraversion, AG – Agreeableness, CO – Conscientiousness, ST – Emotional Stability, OP – Openness to exp.

INFORMAL ECONOMY IN BOSNIA AND HERZEGOVINA – AN EMPIRICAL INVESTIGATION USING MIMIC APPROACH

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Abstract:

This is the first study to explore the size of informal economy in Bosnia and Herzegovina (BiH) over the period 1997-2016. We rely on an empirical investigation based on the well-established MIMIC (Multiple Input Multiple Causes) methodology. As the underlying factors of informal economy in BiH we use tax burden, the level of unemployment, the agricultural sector and government subsidies. As such, the model specification is based on the existing literature which is tailored to the conditions of the BiH economy. The empirical analysis investigates the link between the selected macroeconomic indicators and the informal economy, confirming the importance of these indicators for the incidence of informal economy. We estimate that the informal economy in BiH for the period 1998-2016 was, on average, 34% of GDP, being the largest in 1998 (43%) and the smallest in 2009 and 2016 (30%). Overall, there is a slightly decreasing trend of the size of informal economy, while the model has captured structural brakes linked to the introduction of value added tax (decrease) and the latest global economic crisis (an increase) in BiH.

Keywords: informal economy, tax burden, unemployment, MIMIC, Bosnia and Herzegovina
JEL classification: O17.

Introduction

Informal economy[13] is most often viewed as a part of the economy that should be formalized. However, the question is whether it is better to conduct business activities in the informal economy or to completely abandon it? Participants in the informal economy are often in a situation of choice between these two options, although many formal businesses are also sometimes partly informal (De Soto, 2001).
Bearing in mind that the general impact of the informal economy does not necessarily have to be negative, informal economy needs to be approached with appropriate strategies, with the goal of minimizing the negative effects on the positive side of the informal economy, such as increasing money in circulation or reducing total unemployment.

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[13] In the literature, it is possible to identify number of other words used to define what we call here informal economy. This include terms as grey economy, informal economy, undeclared economy, unobserved economy and similar. To avoid any inconsistency in the text, we will refer always to informal economy.

The informal economy is an active component of the majority, if not all the world's economies, although the size varies considerably among different countries. Informal activities should be included in national statistics as much as possible. However, it is crucial to understand the economic theory that describes the emergence of informal economy together with the factors that increase informal activity (Fleming, Roman, & Farrell, 2000).

Having in mind that informal activities do not participate in the official national statistics, the question arises as to whether these statistics accurately represent the true state of the state's economy? Given that national statistics are used as underpinning of economic policies, inaccurate figures can lead to inappropriate policies and development strategies. Also, the emergence and growth of the informal economy can indicate that current policies, such as taxation and regulatory, are poorly targeted, and lead to the reduction of potential state revenues (Fleming, Roman, & Farrell, 2000).

It is important to note that this paper does not observe transactions within illegal activities such as stolen goods, narcotics, prostitution or theft, but will focus on activities that should be included in the official GDP but are not part of it due to the fact that these legal activities are not declared to the official authorities. However, this study provides contribution to the existing literature by offering an estimate of informal economy for BiH based on a rigorous empirical MIMIC methodology and the most recent data.

This paper is structured as follows. In section 2, we provide a typical literature review of theoretical and empirical literature. Section 3 includes an explanation of the MIMIC model approach that we use in this study. Section 4 contains the empirical analysis which provides us with outputs on the size of informal economy in Bosnia and Herzegovina. Section 5 discusses the main finding, while concluding remarks are part of section 6.

Literature Review

Theoretical background as well as empirical analysis of the informal economy phenomenon is examined in number of papers by prominent authors of this field, including primarily Feige (1989), Williams (2006), Feige, (1989), Wiliams, (2006), Giles & Tedds, (2002), Schneider (2000), Schneider & Buehn, (2013), Williams & Schneider, (2016), Tanzi, (1999). The papers are useful for our investigation as they demonstrate the importance of particular determinants of informal economy and provide comparison of measurement methods. A discussion of these studies is reported in this section.

There are numerous definitions of the informal economy. The most frequently used definition in the key economic literature describes the informal economy as all currently unregistered economic activities that contribute to the officially calculated or observed gross domestic product (Feige, 1989; Schneider, 1994; Breusch, 2005).

Webb, Tihanyi, Ireland, & Sirmon (2009) elaborate that informal economy exists because of the discrepancy between what is defined as legitimate by formal and informal institutions. A gap between formal and informal institutions is evident in the transition countries that work to establish the rule of law and at the same time are struggling with the inheritance of former systems and imposed norms and regulations. Institutions influence economic performance (Efendic & Pugh, 2015), especially in cases where formal and informal institutions come into conflict, which leads to participation in activities within the informal economy. Participants in the informal economy estimate that the benefit of engaging in these activities is greater than participation in the official economy.

Informal economy can also be described as a tendency of people and legal entities to conduct business activities, without the intervention of the state (Tanzi, 1999). Eilat & Zinnes (2002) view the informal economy as a separate phenomenon, instead of the usual approach that treats these activities as a symptom of failed policies. They study the effects in the short term, while assessing the obstacles to sustainable development, focusing on transition countries. In their work, they bring that a high level of unemployment may result in an increase of activities in the informal sector.

Although it is more common in transition and undeveloped countries, the informal economy is not a specific problem solely for these areas, it is also a burden even for the most developed economies of the world. The transition process brings systematic transformations, and the increase in informal activities is inevitable. Adequate institutional and regulatory activities can affect the informal economy, with the timely and effective prioritization of targeted reform sectors, since it is not a one-dimensional problem (Schneider, 2010).

The informal economy affects companies that carry out business activity within the official economy, which may lead to competitive advantages in favour of those enterprises within the informal economy, given the avoidance of legal obligations and non-payment of taxes, although they can take a significant market share (Williams & Schneider, 2016).

Activities of the informal sector cause inefficient functioning of the market and labour, decreasing the total revenues of the state, and encouraging corruption while reducing trust in institutions. Also, there is a question of efficiency from the microeconomic point of view, which is reflected in a poor allocation of resources and ultimately causes an apparent decrease in gross domestic product, since it is an unregistered activity (Eilat & Zinnes, 2002).The discouraging aspect of engagement in the informal economy includes the lack of access to public goods. The primary problem is the lack of support for the legal system, since transactions are out-of-state control. If business activities are performed in the informal sector, participants lose the right of social protection (Eilat & Zinnes, 2002).

Also, the informal economy exposes citizens to the risk of violation of rights, lack of access to the health care system, lower pensions in the future and reduction of funds for public goods (Golias, 2013).

However, two-thirds of the income from the informal economy are spent in the official economy, which shows that it is needed to cautiously approach this phenomenon (Schneider & Enste, 2002). Also, it is possible for the informal economy to alleviate the effects of unemployment and increase economic activity.

After examining the empirical literature focused on BiH, we find a limited number of studies which incorporate this country in their focus, and in particular, we found no studies that followed dynamics of informal economy in this country. One of important study in this literature is by Schneider, Buehn and Montenegro (2010), based on MIMIC approach and panel data. This study with estimates the informal economy for 162 countries, including BiH, for the period from 1999 to 2006/2007 The average value of the informal economy in BiH at the level of 33% of GDP for the observed period is estimated. However, there is no any discussion about this phenomenon in BiH, while the data does not capture more then one decade of economic performance of this country.

One of the frequent references that we find in the BiH literature is a research by Tomas (2010) in which the author provides an assessment of the informal economy in BiH using the indirect method. The author uses several factors in the analysis (for example, labour supply, tax evasion) to provide his estimate of the size of the informal economy in BiH for 2008.

Nastav and Bojnec (2007) investigates the performance of labour force in BiH, Croatia and Slovenia, based on which they provide their estimate of the informal economy. The levels of informal activity differ significantly in these countries, despite the fact that there are indications of a common trend over the long run. The authors estimate the size of the informal economy to be around 30% of official GDP for the period 1999-2001, attributing this to the lower level of economic development, high unemployment rates and destructive warfare (Nastav & Bojnec, 2007).

Krstic and Sanfey (2006) investigate the informal employment in BiH, using a panel data, and find a significant labour market mobility in BiH, which goes hand-in-hand with the growth of the informal sector. They also link poverty and lower income with people in the informal sector, which is additionally caused by a lower level of life satisfaction (Krstic & Sanfey, 2006). In another study, Krstic and Schneider (2015) combine a series of works dealing with tax evasion, labour market distortion, resource shortages, and the causes and measures of the informal economy on the example of Serbia. This study offers a contribution to the measures of reducing the informal economy, as well as the effects of the growth of the official economy in the case of Serbia.

Klaric (2010) investigates the size of informal economy in Croatia by using MIMIC methodology for his estimation. The author author makes estimates of the non-observed economy in Croatia for the period 1998-2009. What he finds is that the informal economy is growing during times of crisis and increases its share in the formal economy. This finding should be important to be checked for the BiH sample as well.

Buehn & Schneider (2008) also rely on the MIMIC model, emphasizing the relationship of cointegration and error correction, through the example and application of the model when it is used to estimate the informal economy in France. In this paper, they demonstrate the analysis in the short and long-term, and they conclude that the results of this macroeconomic model could be used to support policy makers and economic strategies.

Zagorsek, Jaklic, & Hribernik (2009) provides the analysis of informal activities in Slovenia by presenting historical and social institutions that, in their opinion, are closely related to the development and functioning of the informal economy. The authors find that the informal economy is an obstacle to economic development and future progress in a situation when the economy moves towards investment activities and growth. The results of the study show the effects of the informal economy on the economic activity, such as orientation towards low added value and the development of unfair competition in entrepreneurship.

Eilat & Zinnes (2002) investigates informal economy in Poland and Ukraine in the early 1990s and estimate how informal activities are useful in the short term for those who participate in them. They argue that informal economic activities serve as a temporary leverage of productive work in environments with high levels of corruption and bureaucracy, although the implications of the informal economy for long-term recovery have not been properly clarified.

Zaman & Goschin (2015) have examined the informal economy and economic growth in Romania, based on the advantages and disadvantages of the informal economy for the economy and society in general. They main conclusion is that in the long run there is a consistent link between the informal economy and economic growth in Romania.

Dell'Anno (2007) estimates the size of the informal economy of Portugal from 1977 to 2004 and tests the statistical link between the informal economy and macroeconomic variables using the MIMIC model. This study recommends the reduction of the informal economy through the reform of the social protection system, increase in the efficiency of the public sector with the increase in economic freedom and the reform of tax regulation for the self-employed.

Mai & Schneider (2016) model the informal economy of Egypt using two different research methods. In addition to the MIMIC model, they also use the currency demand approach, and conclude that the informal economy takes a significant share in the official economy, but at the same time point to a downward trend. In this paper, variables specific to Egypt's economy are used, such as the importance and size of the agricultural sector and the quality of institutions.

To conclude, there is number of studies which offer estimates of the informal economy, but very limited which focused in BiH. While majority of studies are based on MIMIC indirect methodology of estimation, this approach has not been utilized for BiH, apart Schneider, Buehn & Montenegro, (2010), but with the data more than a decade ago. Our intention is to fulfil the gap in the existing literature focused on BiH and provide estimates of the informal economy that take into account the latest economic performance, including the potential effect of the economic crisis that recently ended.

Methods for Estimating the Informal Economy

There are two main methods of estimation of the informal economy in use, direct and indirect methods. We discuss shortly the key features, advantages and disadvantages of this methodologies.

Direct Methods

The direct methods of estimates are based mostly on qualitative interviews implemented on the ground. These interviews are mostly based on a methodology that structures the examination in three distinct areas. The first part of the questionnaire serves to examine the perception of the respondents about the informal economy. The second part highlights activities within the informal economy which are carried out by respondents, while the final part is based on social and economic factors. When creating a questionnaire, it is important to define the research problem, and clearly separate and refer the respondents to the theoretical setting and activities that fall within the domain of the informal economy (Wiliams, 2006).

Another direct approach that we can meet in the literature is based on the official fiscal audits. These methods are particularly effective when it comes to keeping the track of differences between reported tax revenues and actual income, where the amount of undeclared income that is subject to taxation and the size of the informal economy is brought into direct relation (Feige, 1989).

Overall, the advantages of direct methods is a detailed and in-depth report on monetary activities, structure and socioeconomic characteristics, methods and motivation of people involved in the unofficial economy. It is especially useful to use these methods when preparing policies and strategies that can contribute to improving social well-being. However, direct approaches are difficult to apply at the international level, given the specifics of particular areas in particular countries and the need for standardized interviews that will enable the results comparable.

Indirect Methods

Indirect approaches are based on some indirect indicators that are investigated to provide estimates of informal economy. This approach depends on the definition of research focus itself, since the formation of the model depends on the variables and indicators used to obtain the results of the informal economy distribution. One of these methods look at the difference between

the state consumption and the official income statistics. This approach simply investigates the difference between government revenue and consumption, which is a simple model that is used to provide approximation of informal economy. The larger is the difference, the grater is the level of informal economy. This method provided the basis for development of ISTAT (Italian National Institute of Statistics) / Eurostat model for an unregistered economy. The approach deals with the division of the unofficial economy into "underground" production, informal production, illicit production and production for its own use (Smith, 1994).

Another similar approach is to investigate the difference between the official and the actual employment in the labour force. A decline in the labour force participation of the official economy may indicate increased activity within the informal economy, assuming that the total number of working-age people is constant. The lack of this method is reflected in the fact that there are other reasons for the termination of work, and the fact that work within the official economy does not necessarily mean that a person does not participate in an unofficial economy. Apparently, these estimates should not be taken as precise indicators of the size and development of the informal economy, given their one-dimensional approach (Smith, 1994; Schneider & Buehn, 2016).

A transaction indirect approach is developed by Feige (1989). It is based on an assumption of a persistent and stable link between the volume of transactions and the official GDP. The model requires a calculation based on the deduction of the official GDP from the nominal GDP, using a base year for which the assumption of a non-existence of a informal economy is valid. It is difficult to estimate transactions carried out in cash, especially to separate legal from illegal transactions, and this model uses a wider definition of a informal economy that includes illegal activities. This is one of disadvantages of this indirect methodology.

Cagan (1958) has developed a currency demand approach as another indirect methodology of informal economy estimation. This approach examines the correlation between demand for currency and tax pressure, and it is firstly applied on the United States of America (USA) data. It was further enhanced by Tanzi (1982), who adjusted this approach to investigate the USA informal economy. The basic assumption of the model is based on transactions in cash, which ultimately means that the increase in the informal economy will increase the demand for money. In its model, author controls variables that have a direct impact on the demand for money, such as income increases, payment habits and interest rates. It also sets the foundations for the theoretical layout of the causes of labour in the informal economy, such as tax burden, government regulations, institutions and tax morality.

The main disadvantages of the money demand model are reflected in the fact that money is not paid for all activities within the informal economy. Also, surveys in countries that use a currency that has substantial reserves outside the state cause data inconsistencies, given the exposure to external influences.

Method of electricity consumption is also an indirect method used to estimate informal economy. This approach uses consumption of electricity as a factor that can be directly observed, and which can indicate the volume of the total economic activities. The growth of electricity consumption serves as an indicator of the growth of the aggregate official and unofficial economy. Using the estimation of overall economy (official and unofficial) as a proxy and subtracting the value of the statistically reported GDP, Kaufmann and Kaliberda (1996) come to the estimation of unofficial GDP. This method is easier to use, but it encounters criticisms like those that for some informal activities it is not necessary to use electricity. In addition, this model does not take into account other energy sources which are important for functioning of one economy. Also, technological

progress increases energy efficiency, which brings up a question if it is possible to analyse the informal economy by this method in the long run.

Finally, a widely used indirect method of estimation of informal economy is MIMIC (Multiple Inputs Multiple Causes) model. The MIMIC model constructs informal economy as a latent variable, which means that it cannot be precisely observed or measured. Accordingly, other variables that are observed in the model serve to explain the existence of the informal economy, i.e. they indirectly become a measure of the extent of the latent variable, i.e. informal economy proxy.

MIMIC belongs to a group of linear independent structural models (LISREL) and is modelling by using structural equations (SEMs). Theoretical conditions were set by Joreskog and Gooldberger (1975).

The MIMIC model was first applied to measure the informal economy in the work of Frey & Hannelore (1984). It was used to assess the relative size and development of the underground economy over time in OECD sample of countries, where taxation, regulation and moral duty of taxation were used as statistically relevant determinants. As we have already pointed out, the MIMIC model examines the relationship between a latent variable that is used as an approximation of the "extent of the informal economy" and the relevant observed variables.

The statistical methodology is based on comparing the covariance matrix of the observed variables with the parametric structure imposed by a hypothesized model based on a strong theoretical confirmation, which leads to the conclusion that the MIMIC model is a confirmatory rather than exploratory research technique (Schneider & Buehn, 2016). The model assumes that all model factors are correlated, all the observed variables directly affect other factors, and that the errors within the model are not in correlation (Williams & Schneider, 2016).

The use of the MIMIC methodology involves evaluating a function that represents the connection between a latent variable as a clarifying variable:

$$[\eta: Shadow\ economy\ index],$$

and causes as independent variables, for example:

$$[Xq: Agriculture\ (X_1), Taxes\ (X_2), Unemployment(X_3), Subsidies\ (X_4)]$$

represented with following equation:

$$\eta = \alpha + \gamma_1 X_1 + \gamma_2 X_2 + \gamma_3 X_3 + \gamma_4 X_4 + \zeta$$

Second equation that links the indicators, for example:

$[Y_p: GDP\ Index\ (Y_1), M1\ (Y_2)]$, and latent variable (η), represents measurement model that is estimated in the following way:

$$Y_1 = \delta_1 + \lambda_1 \eta + \varepsilon_1$$
$$Y_2 = \delta_2 + \lambda_2 \eta + \varepsilon_2$$

The MIMIC model provides an assessment of relative changes in the size of the informal economy over time, which means that an additional step is required to express the informal

economy through absolute values. The authors most often show the informal economy as a percentage of GDP, and the procedure is termed "benchmarking" and essentially defines the reference value of the informal economy using the index obtained by the MIMIC model. This is the main shortcoming of the methodology, as this step is needed to express the relative values in absolute form (Schneider & Williams, 2013).

Adapting this model for use implies the need to rely on the informal economy estimates, which is derived by another model or authors, which potentially multiplies the probability of calculation errors. In addition, the most frequent criticisms of the MIMIC model refer to the latent variable itself, since it is difficult to delineate potential legal and illegal activities within the model, and it is impossible to exclude completely obscure variables from illegal activities that do not enter the informal economy.

Helberger and Knepel (1988) argue that Structural Equation Models (SEM) models cause unstable coefficients when changing the size of the sample used. Dell'Anno (2007) also argues that instability is reduced by increasing sample size, but the problem is evident in areas with limited access to the data.

The choice of the normalized index between 1 / -1 in front of the GDP variable, to which theoretically informal economy can influence positively or negatively depending on the specificity of individual economies, directly determines the sign of structural parameters of causative variables, which leads to the potential subjective adaptation of the effects of certain causes of informal economy, in order to adapt it to the theoretical setting. Thus, coefficients of the influence of the cause of the informal economy have an expected sign because they might be forcibly adapted and not based on the theoretical setting (Feige, 2016). This is also convincing crisis which shed lights on the weaknesses of this empirical approach as well.

It is prevailing practice among researchers to use indirect methods for measuring the size of the informal economy and direct methods to identify the characteristics of this phenomenon (Williams & Schneider, 2016; Eurofound, 2013).

The previous discussion implies that there is no the best methodology for estimation of informal economy, as any approach has some advantages and disadvantages. Still, our literature review establishes that MIMIC methodology was widely used method of estimation, having credibility among researchers, and giving possibility for a longer-time span observation, which all lead us to rely on this approach in estimating the informal economy in Bosnia and Herzegovina. The empirical analysis follows.

Empirical Analysis

Model specifications

Following the mainstream MIMIC literature (Breusch, 2005; Dell'Anno, 2007; Schneider & Buehn, 2016), the inputs that we use in our MIMIC analysis includes the real GDP index and money in circulation. On the causes side, we again follow the relevant literature and include the data on the size of agricultural production, tax burden, unemployment and government subsidies. We argue that these indicators are very likely to be important for investigation of the informal economy in BiH, having in mind that the undeclared work is identified to be the largest in BiH economy in the agricultural sector (MCPBiH, 2010), the business sector is generally laud in this country because of the level of taxes and other parafiscal levies they face. Moreover, the unemployment in this country is extensive and very often ordinary people rely on different informal strategies in such environments (Efendic, Cveticanin, & Kumalic, 2017), and finally, the

level of government subsidies in this country is quite high, which is identified in the literature to be relevant to take into consideration (Dell'Anno, 2007). The further rationale behind these variables is presented below.

X1 - Size of the agriculture sector is used based on a fact that it is a sector with many undeclared informal participants since it is difficult to regulate, and it is generally poorly controlled (Chen, 2007). For example, there is evidence of significant influence of this sector for Egypt (Mai & Schneider, 2016) and for countries of the Latin America (Vuletin, 2008).
It is expected that a larger agricultural sector leads to greater scope of the informal economy.

X2 - Tax burden is a most commonly used cause of the informal economy, and it is found to be relevant by many authors (e.g. Tanzi, 1999; Schneider, 2010; Dell'Anno, 2007). Taxes affect decision on employment and stimulate labour market in different ways (Mai & Schneider, 2016). Larger the gap between the total cost of labour and net revenues, the stronger is the incentive to work in the informal economy and to avoid taxes (Loayza, 1996). Tax burden generally increases costs, which makes relevant products more expensive. Actors in developing countries often avoid taxes to offer more competitive price on the market (Mai & Schneider, 2016).

In recent survey performed as part of INFORM[14] project, 60% of respondents found tax evasion as never justified, with 20% responses that say that the tax evasion is sometimes justified. These numbers show that tax morality in BiH is lower compared to the EU (European Commission, 2013), especially when it comes to entrepreneurs who justify tax evasion more than ordinary citizens.

In the context of BiH, we expect that the higher tax burden stimulates the growth of the informal economy.

X3 – Unemployment rate link with the informal economy is not clearly established due to the opposing findings of researchers (Mai & Schneider, 2016). With larger unemployment rate, more people could potentially seek employment in the informal sector. On the other hand, the reduction of unemployment may indicate a general slowdown in economic activities and also reduce activities in both, formal and informal sectors (Klaric, 2010). Labour force has a heterogeneous structure with part of participants being classified as unemployed and other part as retired, minors or housewives, categories excluded from official unemployment statistics (Dell'Anno, 2007). Also, there is possibility that officially employed people participate in the informal economy (Tanzi, 1999).

However, we link to the conventional thinking and believe that the higher unemployment rate in BiH will lead to a greater share of informal economy.

X4 – Finally, subsidies may motivate participation in the official economy. However, subsidies could potentially widen the competition gap if they are ineffectively distributed, which could lead to discrepancies between the business owners (Dell'Anno, 2007). Following the literature, we expect for subsidies to increase the informal economy.
Y1 – Real GDP Index is used as a reference variable, that is, as a measure of the informal economy. The authors of empirical research take on contradictory attitudes about the link between the official and the informal economy. The question arises whether the reduction in

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official economic activities leads to job losses and an increase in the number of participants in the informal economy, or on the contrary, a reduction in total GDP leads to a reduction in demand for products and services within the informal economy, thus neutralizing the effects created by the new participants in informal economy (Dell'Anno, 2007)?

Y2 - Currency in circulation is being used because of the fact that most of the informal transactions are expected to be paid in cash, in favour of the use of credit and debit cards or other types of bank transactions, in order to avoid detection and punishment by the competent authorities (Mai & Schneider, 2016).

Breusch (2005); Dell'Anno (2007) and Schneider (2010) conclude that there is a significant positive link between the size of the informal economy and the money in circulation, which is the argument that leads us to rely on this indicator.

Considering the lack of data and the specific situation of Bosnia and Herzegovina, given the war conflict and the first recovery period after the war, macroeconomic analysis is based on the data for the past 20 years, starting from 1997 and ended with 2016. A descriptive statistic of the indicators used in empirical modelling is available in Appendix 1.

Testing the data

Economic and financial time series are subject to behavioural changes over time, or the instability of the mean. From empirical point of view, it is important to determine the used data are trended. In the MIMIC analysis, the methodological approach assumes removing non-stationarity before the data analysis. This is to ensure that the time series does not follow the time trend and is not dependent on it, which means that the mean and variance remain the same regardless of the time of the measurement of the variable.

Before the initial testing of the variables, it is worth noting that the time series used to estimate the informal economy does not comply with the theoretical setting due to the insufficient number of observations (n = 20), which strongly reflects the chi-square and model fit statistics (Mai & Schneider, 2016). After conducting relevant test, we note that all variables are non-stationary after the first differentiation I(1), which allows us to use the level data, in order to examine the effects of the used variables in the long run (Buehn & Schneider, 2008).

Table 11. ADF Unit Root Test

Variable	Level data			First difference		
Causes	Intercept	Trend and Intercept	No Trend, No Intercept	Intercept	Trend and Intercept	No Trend, No Intercept
Agriculture	-0.812	-4.285*	-1.816	-3.264**	-3.931**	-4.518*
Taxes	-3.874**	-4.461**	-0.547	-6.113*	-6.244*	-5.736*
Unemployment	-3.184**	-2.857	0.145	-3.837**	-4.104**	-3.971*
Subsidies	-1.568	-3.337	1.783	-4.02**	-3.749**	-4.138*
Indicators						
GDP	-2.755***	-1.047	1.589	-2.959***	-3.335***	-2.055**
M1	-2.768***	-3.613***	-1.041	-4.714*	-4.539***	-4.852*

MacKinnon (1996) p-values
*, **, *** statistical significance at 1%, 5%, and 10% level

The testing of the correlation between the variables is also needed to prove the validity of the model, avoiding a model that would have coefficients that are not based on the interaction of variables, but reflect external influences, a non-measurable spurious model. To investigate this possibility, we use the Engle and Granger's two-step approach to make sure that all four indicators that we aim to use in the model are correlated with the imposed indicators. In the first step we perform regression on level data, using the Least Squares method and we get the coefficients, residuals and statistical data:

Table 12. Engle Granger Cointegration Test

Coefficient	GDP	M1
Agriculture	0,04	0,37
Taxes	0,03	0,16
Unemployment	-0,01	0,17
Subsidies	0,01	0,07
R-squared	0,87	0,71
Durbin-Watson	2,04	1,34

The statistical tests reported in Table 2 show a lower value of R-squared compared to Durbin-Watson statistics, which is a signal that these are equations with possibility of cointegration. In order to test cointegration, we perform the ADF test over the residuals u1 (-3.2) and u2 (-2.07) and reject the null hypothesis (which is, say in the brackets) at a conventional level (5% level). Thus, we conclude that the causes of the informal economy are cointegrated with both indicators that we use, i.e. GDP and money circulation.

Estimating the model parameters

The MIMIC approach assumes a normal distribution of errors, limiting the model error parameters, by restraining the mean to a value of 0 and standard deviation to a constant, while retaining the conditions of uncorrelated error terms (Dell'Anno & Schneider, 2009). As stated in the model explanation, it is necessary to specify one of the indicators to a value different from zero. Given that the GDP sign can be positive and negative (+/- 1) depending on the impact, we decide to limit the value of +1, so that we can monitor the movement of the informal economy index and express it through the ratio of GDP. The approach to limiting the parameter in front of one of the indicators is typically used in the MIMIC literature (e.g. Giles & Tedds, 2002).
For regression and calculation of the MIMIC coefficients, we use Maximum likelihood (MLE) estimation, a method that determines the values of model parameters, but we also use the option to calculate parameters for a time series with incomplete data. This is because the tax burden and subsidies are variables with a few missing data not available from official sources. The values of the parameters obtained by this method maximize the probability that the process described by the model creates the data that is observed.

Table 13. Estimation of MIMIC Model

Variable	MIMIC model 4-1-2	MIMIC model 3-1-2
Agriculture	0.8*	0.76*
Taxes	0.31**	0.34**
Unemployment	0.31**	0.27***
Subsidies	0.15	-
GDP	1	1
M1	0.99*	0.99*
Chi-square	47.547	32.936
RMSEA LO90	0.322	0.332
Degrees of Freedom	10	6

*, **, *** denotes statistical significance at
1%, 5%, 10% level

Since this is a confirmatory method that tests previously imposed theoretical conditions, we can conclude that all variables within the model have the expected sign of influence explained in the previous section. If we look at the coefficients, all variables included in the fine model (second column) are statistically significant at the 10% or lover. We exclude subsidies from the final model as this variable does not satisfy the condition of statistical significance. In this way, we form the MIMIC model of the form 3-1-2.

The obtained results indicate the symptoms that appear in models with fewer observations, which are not uncommon in other studies (Klaric, 2010; Buehn & Schneider, 2008; Krstic & Schneider, 2015). The expected high RMSEA results (high root mean squared error of approximation) of 0.322, with high Chi-square 32.936, are attributed to a small number of observations per variable. Unfortunately, availability of the data for BiH is increasing over time, but the collection of macroeconomic data for a period longer than 10 years is still a difficult task for the researcher. It is worth mentioning that a small number of samples should be considered when interpreting the reliability of the results, which were used in consistency with the published scientific research and methodology explained in the paper so far.

Benchmarking of the informal economy index

The final step in the analysis is the evaluation of the index, as it is used by Dell'Anno & Schneider, (2009).

There is currently no consensus on the most appropriate benchmark variable, so the process of benchmarking will be performed by multiplying method, to reach real values expressed in percentages of GDP (Mai & Schneider, 2016):

$$\eta_t = \frac{\overline{\eta_t}}{\overline{\eta}_{base\ year}} \eta * base\ year$$

Variables being:

$\overline{\eta}_t$ – value of MIMIC index for year $_t$ (based on structural model)
$\overline{n}_{base\ year}$ – value of MIMIC index at base year (2008)
$\eta * base\ year$ – previous estimation of informal economy in BiH for 2008
The model relies on the results of the study introduced earlier, that estimate the BiH informal economy in 2008 as 30.97% of GDP, and which is also based on MIMIC method (Schneider & Fedelino, 2018).

Interpretation of the Results

Based on the adjustment and transformation of the index, the informal economy is estimated to be around 43% of GDP in 1998 and had recorded a downward oriented trend over time, up to 30% in 2016.

Graph 1. Informal economy dynamics
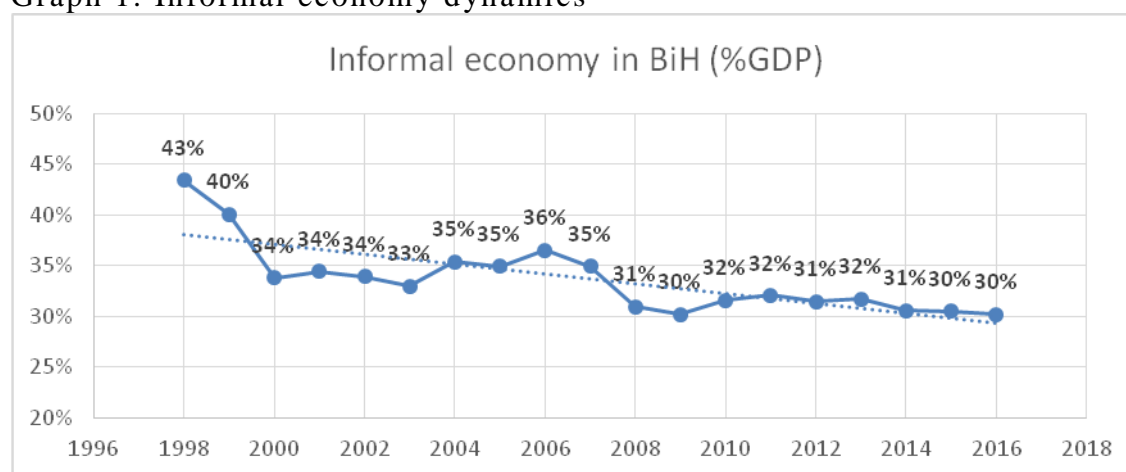
Source: Authors calculations

The high values of the informal economy in the first available years of measurement (1998-1999) could be attributed to the low level of GDP in the post-war recovery period in BiH and undeveloped formal institutional environment. The levels of GDP grew with high rates over the first few years after the Bosnian war (1992-1995), which in relative terms could decrease the informal economy even if it was at the same initial level.
The time of 1998 was the period when BiH was focused on rebuilding infrastructure and implementing market reforms in a situation that was characterized by a low level of regulation and high instability. Investment activities were limited, purchasing power was low, resulting in a greater involvement of residents to informal sector in order to ensure a better economic status.
After the expected slowdown of GDP growth rates over the period 2000-2002, the informal economy has been adopting to more stable economic flows, being more stable. In the forthcoming period, we can identify two changes in the trend. The first one is after 2006, when the value added (VAT) tax reform was implemented and VAT introduced, which all lead to further decrease of the informal economy. To the contrary, the effect of the latest global economic crisis that hit BiH economy in 2009 was a slight increase in the informal economy over the next two years, while the remaining period is rather stable and moves around 30% of GDP. These changes are in line with economic expectations, thus confirming the validity of the data and methodology used in this study.

Given the weaknesses and limitations of the MIMIC method that we discussed above, the estimates that we report should be viewed as approximate values of the dynamics of the informal economy in BiH, rather than the exact values of the scope of this sector.

Conclusions

This is a first study which investigates dynamics of informal economy in a post-conflict Bosnia and Herzegovina, covering the period 1997-2016. The study uses secondary data and MIMIC methodology to calculate the proxy for informal economy in this country. Our empirical investigation reveals that the informal economy in BiH has a decreasing trend over the observed period, ranging between 43% and 30% of GDP, with an average value over the observed period of 33,6%. The most recent data suggest that the informal economy in this country could be around 30%, which signifies importance of this topic to the policy makers and a need for policies and strategies that will tackle this phenomenon in the future.

The data suggests also that a dynamic behaviour of informal economy in BiH recorded two brakes worth mentioning. The first one is the introduction of the value added tax reform in 2006, which had a positive effect in the country by lowering the level of the informal economy over the following few years. And, the contrary effect was identified during the latest crisis which hit BiH in 2009, which slightly increased the value of informal economy for the following couple of years. The both results are in line with economic expectations.

Finally, we acknowledge that MIMIC methodology has its weaknesses and these results should be interpreted as approximation but not exact values of the size of informal economy. Still, these findings are consistent with other estimates and they do suggest that informal economy in BiH remains rather high and they suggest a need for more active focus on this issue.

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Appendix

Table A 1. Descriptive statistics of the variables

Variable name	Obs	Mean	Std. Dev.	Min	Max	Description
Year	20			1997	2016	Time series
Agriculture	20	10.51	3.91	7.23	21.34	Agriculture as % of GDP
Taxes	12	20.18	0.75	18.95	21.69	Taxes as % of GDP
Unemployment	20	26.58	2.33	22.21	31.1	ILO Unemployment rate
Subsidies	12	45.20	2.82	40.58	50.13	Subsidies as % of expense
GDPindex	20	0.85	0.18	0.48	1.08	GDP index (base year 2008)
M1	19	2.38	0.86	0.77	4.35	Natural logarithm of money growth
*Yearly data						

Source: World Bank (2018)

SWOT ANALYSIS OF THE BiH'S ECONOMIC REGULATORS

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Abstract

Getting closer to the European Union (EU) implies meeting accession criteria, but at the same time their fulfilment is just a procedural step on the way toward full economic integration into the EU and participation in their economic life on equal basis. Thus, existence of the functioning market economy, which is at the same time both, formal membership criteria and transition requirement, needs to be coupled with strong economic governance. Some of the most important in this respect are economic regulators aimed at both, addressing market failures and promoting competition.

Regulation plays important part in economic life. Network industries and their good regulation are considered to be of crucial importance for functioning of modern market economy and hence, their performance is being one of the pillars of the second economic (sub)criteria and economic governance accordingly.

The purpose of this Paper is to outline role of the good regulation and economic regulators in the context of the BiH's accession process and especially fulfilling Economic criteria for EU membership. Development and functioning of the economic regulators in BiH are assessed by using SWOT analysis. Paper is focused on economic regulators and regulators with both, economic and competition/consumer protection responsibilities. Although each of network industries, as well as economic regulators have its own specificities, for the purpose of this Paper they are considered as whole.

Apart from being recognised as a crucial for existence and functioning of market economy, the main economic governance instruments in BiH, such as Reform Agenda and ERP do not refer to performance of the economic regulators, and do not compare them with respective regulators abroad. Instead, they emphasize need for privatisation or/and restructuring in the field of network industries.

Based on presented SWOT analysis, it is obvious that regulators in BiH suffer from many weaknesses, while they act in very complex environment. However, process of European Integration should provide incentive for restructuring of whole system in line with the requirements deriving from the EU accession process and best practices, resulting thus in proper functioning of regulated and competitive segments.

Keywords: Bosnia and Herzegovina, European Integration, Economic Criteria, Economic Regulators

JEL classification: L51 Economics of Regulation

1. Introduction

In modern world we live in, boundaries become less important, while words as "integration" and "connectivity" are the ones that make difference. What matters most are energy, transport, water,

railroads, digital technologies and other network industries, whose proper development leads to growth and prosperity of economy as whole.

Getting closer to the European Union (EU) implies meeting accession criteria, but at the same time their fulfilment is just a procedural step on the way toward full economic integration into the EU and participation in their economic life on equal basis. Thus, existence of the functioning market economy, which is at the same time both, formal membership criteria and transition requirement, needs to be coupled with strong economic governance. Some of the most important in this respect are economic regulators aimed at both, addressing market failures and promoting competition.

In market economy, market failures cannot be corrected by state intervention, but by introducing regulatory policies and structures. In order to liberalize market and to open it to competition, network industries which previously had been the subject of government intervention should become subject of regulation. That will ensure that service providers in these industries have equal access to network infrastructure, benefiting thus competitiveness of the economy and consumers' welfare.

Having in mind above mentioned importance of network industries for economy as whole, it can be concluded that good regulation plays important part in economic life. Network industries and their good regulation are considered to be of crucial importance for functioning of modern market economy and hence, their performance is being one of the pillars of the *second economic (sub)criteria* and economic governance accordingly.

The aim of this Paper is to outline role of the good regulation and economic regulators in the context of the BiH's accession process and especially fulfilling Economic criteria for EU membership. Special attention is paid to reviewing a progress achieved by Bosnia and Herzegovina (BiH) in this respect. Development and functioning of the economic regulators in BiH are assessed by using SWOT analysis, that is analytical tool based on the qualitative analysis. Paper is focused on economic regulators and regulators with both, economic and competition/consumer protection responsibilities. Although each of network industries, as well as economic regulators have its own specificities, for the purpose of this Paper they are considered as whole.

Apart from Introduction and Conclusion, theoretical part of this Paper is consisted of three main chapters. The first chapter deals with membership criteria, especially economic one, aiming at explaining logic upon they are based. Special attention is paid to issue of economic governance, including different instruments BiH is provided with currently, as a part of conditionality deriving from BiH's European Integration Process. Second chapter is about regulation and regulators in general, their role in economic life and functioning market economy. It outlines common roles and functions of regulators as well as the main challenges they are faced with. Finally, third chapter will contain main findings related to work of BiH's regulators presented in Answers of the BiH to the EC Questionnaire (Answers), the Economic Reform Programme (ERP) and other key economic governance documents.

2. Economic Criteria and Economic Governance

2.1.   Membership Criteria

Up to now the enlargement countries have been guided in part by the Copenhagen criteria which are the essential conditions all candidate countries must fulfil to become a member state. They include following:

- Political (or I) criteria: stability of institutions guaranteeing democracy, the rule of law, human rights and respect for and protection of minorities;
- Economic (or II) criteria: a functioning market economy and the capacity to cope with competition and market forces;
- Legal (or III) criteria: administrative and institutional capacity to effectively implement the *acquis* and ability to take on the obligations of membership.

In all former central planning economies, including BiH, European Integration Process and Transition goes in parallel. Taking into account substance of the economic membership criteria stated above, especially its first part, it is obvious that their successful fulfilment would mean at the same time completion of transition process requirements.

Both, fulfilment of Economic criteria and transition process requirements are about the quality of the functioning of the economy, the efficient allocation of resources and the relative power of competing against other countries' products in the EU market which all represents very essence of economic governance.

However, Economic criteria is consisted of two substantially separate parts, that is sub-criteria. In its analysis of Economic criteria Mrak concluded that "the both economic criteria are not only interrelated and mutually reinforcing, but are also closely linked to the non-economic criteria, i.e. with the political as well as with the *acquis* criteria (2005: 1)". Furthermore, he has elaborated that *first economic (sub) criteria* – existence of the functioning market economy (or transition) – can only be achieved if the rule of law is well established and democratic institutions are strong (Political criteria). The *second (sub) criteria* – the capacity to compete in the EU market – is closely related to the country's ability to take on the obligations of the membership (Legal criteria). A candidate country can compete on the EU market only if its products are produced in conformity with the EU standards, and are being in compliance with norms and requirements stipulated by the *acquis*.

Therefore, transition from central planning to market economy should be based not only on economic, but on a legal reform also, while illustration above is good example in this respect. Thus, two reforms are independent, but need to proceed in parallel, while legal framework needs to enable smooth running of the basic economic functions (EC, 1997, pp. 2-7).

2.2.   Economic Governance

Apart from Copenhagen criteria, countries in the European Integration Process are being provided with many other instruments which facilitates process of economic reforms and strengthens their economic governance, contributing fulfilment of Economic criteria and thus process of their economic integration into EU.

When it comes to Bosnia and Herzegovina (BiH), process of economic reforms currently is based on instrument called Reform Agenda for Bosnia and Herzegovina 2015-2018 (Reform Agenda) whose implementation became new conditionality for BiH and hence central element for assessing BiH's progress in the European Integration Process in general. Reform Agenda sets out the main plans for socio-economic and related reforms of all levels of government and it has been adopted by them accordingly. As such, it is closely aligned with the aims of the EU's new approach to economic governance in the Western Balkans (WB) and is complementary to the ERP (Reform Agenda, pp. 1-2).

The main goal of the ERP[15] is to outline a medium-term macroeconomic and fiscal framework, including fiscal measures, and a comprehensive structural reform program aimed at improving the country's growth and competitiveness.

Finally, economic reforms in BiH currently are also based on Stabilisation and Association Agreement (SAA) and (sub) committees' recommendations respectively, the EC's annual progress reports, International Financial Institutions' reports, etc. They all together contain European Integration related economic governance requirements, outlining thus structural reform strategies conducive to future integration into EU internal market and economic policy coordination processes.

Moreover, all these instruments focus on socio-economic reforms and pay attention to elements such as enhancing employment, the knowledge base, competitiveness, energy efficiency and social inclusion. Since most of the consequences of the EU financial crisis are rooted in the lack of structural reforms, the European Commission (EC) has changed its enlargement strategy as of 2013 to include Europe 2020 and its main priorities for the enlargement countries. The issue is essential not only in terms of giving enlargement countries a more European perspective, but also for helping them to tackle the economic fundamentals first and to be able to successfully fulfil the Economic criteria.

Thus, the EC has been implementing a new exercise „touch of European Semester" by which enlargement countries are requested to adapt their economic governance to the changing European model (Euinside, 2013). This new approach is predominantly targeted on the WB countries since the EC has assessed „none of them is yet considered to be a functioning market economy. It will build on the experience of EU Member States in the European Semester. There will be an increased emphasis on structural reforms which are sectoral in nature (2014: 5)".

3. Good Regulation and Economic Regulators

3.1. Why regulation?

Network industries, such as transport, e-communication and energy, provide services through a network infrastructure. The network infrastructure is considered as a natural monopoly subject to regulation when it comes to pricing and access to the network, while network services are subject to competition. The co-existence of both segments, regulated and competitive, requires them to be coordinated and regulated by a strong and independent regulator. In general, as long as each operator gets a fair and transparent access to the infrastructure, competition related to service provision can be ensured. In opposite, absence of regulation could result in situation in which operators would be able to increase its market power, resulting finally in insufficient delivery of services at too high prices, and distortion of competition at EU internal market accordingly (EC, 2013a, p. 15; OECD, 2017, p. 33).

Following these considerations, during 1990s the European Union (EU) has started with broad regulatory reform programme in network industries, in order to increase competition in these sectors through liberalisation and privatisation (ECB, 2005, p. 4). This action was part of overall Lisbon reform agenda intended to establish European economy as leading one at global level.

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[15] ERP 2018-2020 has been adopted by the BiH Council of Ministers on its 131st session, held on 30 January 2018, and submitted to the EC accordingly.

In more detail, rationale of the EU's liberalisation policy in the field of network industries was "to increase, through an intensification of competition, the efficiency and the performance of these network industries. Ultimately this is expected to lead to lower prices and better services for households and enterprises, thereby increasing the overall competitiveness of the economy". Finally, EU considers this process improves performance and resulted in "generally lower price levels, expanded output and productivity gains" (EC, 2013c).

According to last available data provided by the EC (2013a, p. 9), key network industries regulated at the EU level such as e-communications, energy and transport in recent years account together for some 9% of value added, 6% of employment, and 11% of households' purchases in the EU. Moreover, these are the industries of great economic importance since goods and/or services they produce serve as inputs for all range of different economic, but also social activities. The EC thus has considered "the price and quality of their outputs are essential for the growth and competitiveness of European industries, for the well-functioning of the internal market, and for the standard of living of European consumers (2013a: 9)".

When it comes to enlargement agenda, accession requirements in this respect are derived from EU policy in this particular area, which is reform and liberalisation of network industries aimed at increasing competition and enhancing consumer welfare. In order to evaluate reform progress in this respect, the EC assess:

- To which extent network industries are subject to specific protection such as market entry, price setting etc.;
- Liberalisation and deregulation measures taken over the past year and their achieved and/or expected economic impact;
- Quality and characteristics of existing regulatory framework, that is the regulatory and institutional environment and changes to it that materialised over the past year (Progress Report 2006: Economic criteria - report by the national authorities, 2006).

3.2.   What is regulation?

According to the Organisation for Economic Co-operation and Development (OECD), which has established itself as a key source of international principles for good regulatory practices over the past three decades "regulation is a key tool for achieving the social, economic and environmental policy objectives of governments that cannot be effectively addressed through voluntary arrangements and other means (2014: 17)".

There are seven main principles of good regulation and they include (OECD, 2014, p. 23):
- Serve clearly identified policy goals, and be effective in achieving those goals;
- Have a sound legal and empirical basis;
- Produce benefits that justify costs, considering the distribution of effects across society and taking economic, environmental and social effects into account;
- Minimise costs and market distortions;
- Promote innovation through market incentives and goal-based approaches;
- Be clear, simple and practical for users;
- Be consistent with other regulations and policies;
- Be compatible as far as possible with competition, trade and investment-facilitating principles at domestic and international levels.

Regulation is being implemented by regulators which can been defined as "entities authorised by statute to use legal tools to achieve policy objectives, imposing obligations or

burdens through functions such as licensing, permitting, accrediting, approvals, inspection and enforcement (OECD, 2014: 17)".

Regulators can take different institutional form (unit within ministry, separate agency etc.), while their functions can be performed at different level of government (central, local, regional, municipality, etc.). They can be in charge of regulation of single or several industries, but also of regulation of whole economy. Their competences can be purely economic, purely non-economic or they can have combination of these or other functions. Finally, regulators can be market or non-market regulators, depending on whether their decisions will have an economic effect or impact on the market. (OECD, 2014, pp. 18-19).

The five most common roles and functions of regulators are (OECD, 2017, p. 34):
- Tariff regulation;
- Access regulation;
- Monitoring;
- Dispute resolution;
- Setting technical standards.

Even though different regulators are faced with different challenges, depending on their role industry they operate in, or, the most common challenges they are facing with can be summarized as follows (OECD, 2017, p. 53):
- Encouraging efficient investment, in the sense they should find way to keep investment incentives, while making decision about tariffs and infrastructure access at the same time;
- Data and information asymmetry, means they obtain valuable data necessary for smooth performance of regulator's functions;
- Governance of economic regulators;
- New technology;
- Changes related to mandates, responsibilities and functions;
- Coordination with other stakeholders in performing their roles;
- Engaging with other stakeholders when it comes to making regulatory decisions;
- Regulating infrastructure in the conditions of declining demand for services provided through that infrastructure;
- Appeals means dealing with decision making in the context of legal review.

4. SWOT Analysis of the Economic Regulators in BiH

4.1. Economic Regulators in the EC Questionnaire

Questions related to the state of play of economic regulators in network industries in BiH were included in the EC Questionnaire submitted to BiH. The most concrete question in that respect was Question No. 13 related to status and work of economic regulators. It was included in *Economic criteria; I sub(criteria): Existence of a functioning market economy; part II: the Functioning of product market*. Concretely, BiH was asked to list active regulatory and supervisory institutions, including a short description of their legal competences, institutional setup, financing and the number of staff. In addition, within the same question, BiH was asked to describe challenges and coordination of regulatory institutions with respect to market competition, consumer protection, energy and transport sectors (the EC Questionnaire, 2016, p. 58).

Answers submitted by institutions in BiH have referred to economic regulators established at their level of government, explaining briefly their legal basis, competences, institutional setup, number of staff, and financing to some extent. Economic regulators being mentioned in this respect were notably the Competition Council, the Regulatory Agency for Communication and Electricity Regulatory Commissions established at the level of state and entities. However, Answers lack the deeper analysis of their functions and challenges they are faced with in performing their actions.

Although proper functioning of regulatory structures has been recognised as a crucial for existence and functioning of market economy, the main economic governance instruments in BiH, such as Reform Agenda and ERP do not refer to their performance and do not compare them with respective regulators abroad. Instead, they emphasize need for privatisation or restructuring in the field of network industries.

4.2. SWOT analyses

As already stated in Introduction, SWOT is analytical tool based on the qualitative analysis. It can provide a good basis for successful strategy formulation, since it helps in understanding current situation (Prunckun, 2010, pp. 135-137). As for methodology applied in SWOT, it is being concentrated on analysis of the firms' strengths and weaknesses (internal factors), together with opportunities and threats (external factors), contributing thus appropriate strategy formulation (Hitt, Black & Porter, 2014, p. 80).

What needs to be stated is that in some situations is not easy to distinguish among SWOT indicators in the terms of their evaluation. In more detail, same variable or situation at the same time can be considered as an opportunity or a threat, depending of perspective and point of view. However, having in mind subject and context, indicators in this Paper will be evaluated from the perspective of overall benefits for state, economy and society as whole, while perspectives and single interests of particular industries or regulators will not be taken into considerations.

One of such situations that is not easy to assess is the fact that vast majority of network industries in BiH, especially in Federation of BiH are still state-owned, means there is a strong need for independent regulation. Process of liberalisation and opening to competition in those industries are still in early stage, even though the most industries already being regulated and have implemented process of unbundling. Taking into account that unbundled and regulated market gradually enables efficient competition among new coming independent operators, above mentioned state ownership for the purpose of this Paper will be taken as a strength, limited to situations where network infrastructure is managed independently and without political interference.

Transposition and implementation of international standards in domestic legal order in respective fields, as a part of the European Integration Process, as well as existing level of technical assistance, including cooperation between foreign and domestic experts, should also be regarded as strengths.

However, regulatory system in BiH, as well as in the most other former centrally planned economies suffers from many weaknesses, and is being far from fulfilling its social and economic role. BiH still does not have in place proper legal or institutional framework, neither institutional culture of regulation. Along with the slow pace of reform process in general, limited progress in this particular reform area is caused largely by lack of political will and resources, coupled by misunderstanding of the regulatory independence concept and role of the regulation in general.

Following existing administrative structure in BiH, there are different rules governing this area at different levels of government, or there is a possibility of their unequal application, undermining thus existence of the BiH's single economic space.

Considering opportunities, the first to be mentioned is European perspective, which among other means that reforms requirements will be supported through funds and technical assistance in respective policy fields. Opening to competition of the network industries, which is important element of the transition process, should also provide incentive for further positive trends in this area, resulting finally in increasing willingness for investments in these sectors. However, market liberalization and privatisation which opening to competition entails, in the case that are not led properly could easily become threat and have negative effects on overall economic output, endangering thus functioning of market economy including network industries service provision.

However, even though European perspective as such should be regarded as an opportunity, as stated above, in the BiH where support to the completion of European Integration Process is only declaratory, this opportunity is transformed into one of the major threats in general. Thus, insufficient commitment to successful completion of requirements deriving from European Integration Process, including completion of transition process and establishment of the functioning market economy is one of the most dangerous threats.

Although in recent years process of court settlements in BiH has been improved in general, functioning of the network industries regulators in BiH (as well as of judiciary) is still burdened with case backlogs, especially in the field of utility services, caused by increasing number of unpaid utility bills cases. According to last available data from June 2016, this backlog was made up of over 1.7 million cases (EC, 2016, p. 16), resulting thus in lower level of profitability of utility network industries.

Moreover, EU *acquis* is "moving target" that changes and develops all the time, which concretely means country could be in position of constant changing legislation in order to harmonize it with *acquis*.

Based on above presented brief analysis and findings, it can be concluded that economic regulators in BiH neither play basic roles and functions of regulators, nor are faced with challenges presented earlier, considered to be common for all regulators. That would mean that regulation as a social function, and economic regulators as their decisive part, are still in the early stage of its development, while their importance and roles are not fully understood. Perhaps, this is the most dangerous of all the weaknesses in this respect.

Table 1. SWOT Analysis of the BiH's Network Industries Regulators

Internal	
Strengths	Weaknesses
1. International standards implemented and reflected in national legislation; 2. Predominantly state-owned network industries and infrastructure; 3. Markets regulated and unbundling implemented in the most of the cases; 4. Cooperation between national and international authorities.	1. Deficient legal and institutional framework; 2. Slow pace of reform process; 3. Lack of institutional culture in this policy area; 4. Lack of political will and resources; 5. Strong political influence without independence; 6. Different rules or their unequal application; 7. No single economic space. 8. Insufficient performance of standard economic regulators' functions; 9. Importance and roles are not fully understood.
External	
Opportunities	Threats
1. European Perspective; 2. Availability of technical assistance and international expertise; 3. Market liberalisation; 4. Willingness to invest.	1. Declaratory political support to the European Integration Process, including transition to functioning market economy; 2. Network industries (but predominantly utility) case backlogs; 3. EU *acquis* as a "moving target".

5. Conclusion

Fulfilment of formal accession criteria is just step on the way to full integration into the EU. Concretely, II Copenhagen criteria, known also as Economic criteria, provides for existence of a functioning market economy and capacity to cope with competition and market forces in the EU. However, full participation in the EU's economic life, notably internal market, Economic and Monetary Union (EMU) and whole range of horizontal policies, as well as the realization of benefits arising from it, requires more than fulfilling formal requirements. Among other things, it requires existence of functioning economic institutions and their profound reform, coupled with legal framework which needs to enable smooth running of the basic economic functions.

Successful economic and institutional integration is a process and can only be achieved, if EU membership is actively used as a reform anchor and domestic ownership of reforms is sustainable. Without addressing the need for far reaching structural policies reform, not only the new Member States will be disappointed when expected instant prosperity fails to materialise, but the current Member States will be disappointed also, finding themselves in an EU with a depressed economic periphery. Finally, in order to reflect these considerations, as of 2013 the EC changed its approach to help the enlargement countries to tackle the economic fundamentals, contributing thus strengthening of their economic governance and fulfilment of the Economic criteria.

One of the pillars of the functioning market economy is existence of efficient and effective economic regulators in the fields of network industries. In general, some of the biggest changes in transition process take place in the field of network industries since transition to a market economy implies that they can no longer be subject to state intervention, but the subject to regulation aimed at correcting market failures. Network industries needs to be unbundled in the terms that network infrastructure, considered to be natural monopoly, should become subject to

regulation, while services are to be opened to competition. Finally, one of the roles of the economic regulators would be to enable smooth and coordinated functioning of both segments, regulated and competitive, ensuring thus fair and transparent access to the network infrastructure and competition in service provision accordingly.

Answers to the EC Questionnaire submitted by the BiH's institutions, although contain certain situation overview regarding economic regulators of network industries, in general lacks the deeper analysis of their performance and challenges they are faced with. Apart from being recognised as a crucial for existence and functioning of market economy, the main economic governance instruments in BiH, such as Reform Agenda and ERP do not refer to performance of the economic regulators, and do not compare them with respective regulators abroad. Instead, they emphasize need for privatisation or/and restructuring in the field of network industries.

Based on presented SWOT analysis, it is obvious that regulators in BiH suffer from many weaknesses, while they act in very complex environment. However, process of European Integration should provide incentive for restructuring of whole system in line with the requirements deriving from the EU accession process and best practices, resulting thus in proper functioning of regulated and competitive segments.

However, the most dangerous weakness among all would be that concept of regulation and economic regulators are not fully understood, while their development in BiH is still in the early stage. Their performance can not be checked against performance of economic regulators in similar network industries abroad, since they hardly play their standard roles and functions. Finally, challenges they are faced with are also far from those outlined as common for all economic regulators.

Finally, in order to improve understanding of the concept of network industries regulation, and functioning of economic regulators accordingly, BiH's institutions in charge of ensuring smooth operation of regulated network industries should focus their efforts on:

- Reviewing general market context in relation to existence and work of network industries economic regulators.
- Outlining the best practice models related to performance of the network industries economic regulators in the EU and other accession countries, especially taking into account challenges outlined as a common for all economic regulators.
- Further alignment of existing legal and institutional framework of network industries economic regulators in BiH with the EU requirements and best practices.
- Advocacy and awareness rising of ministries and other government institutions, business community and general public in BiH, regarding necessary policy changes with regards to establishment and work of economic regulators in the field of network industries.

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THE USEFULNESS OF REPORTING OF LEGAL ENTITIES IN THE FEDERATION OF BOSNIA AND HERZEGOVINA

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Abstract

According to the law on accounting, the regular annual financial report of the legal entities that apply IFRS, i.e. IFRS for SMEs includes the Balance sheet, Income statement, Reports of changes in capital, Cash flow and Notes. The objective of general purpose financial information about reporting entity that is useful to existing and potencial investitors, lenders and other creditors in making decisions relating to providing resources of entity. However, classical financial reporting does not meet the information needs for decisions in the new economy, which has led to the development of new models of business reporting. Investors and lenders do not accept the financial statements just like that which presents them to management, but they are trying to get into the quality of examining and taking notes, they get a clearer picture of the performance that are the product of the accounting policies. The objective of this research is to analyse the usefulness of reporting of legal entities in the Federation of Bosnia and Herzegovina. So, the aim of this research was to examine the topic of quality financial reports with reporting entities in Bosnia and Herzegovina. The paper deals with the issue of reporting with special emphasis on the reporting of non financial information, such as accounting policies and integration of financial and non-financial information in the annual reports. Empirical research was conducted on a sample of 49 professionals from the accounting profession. We conducted data analysis including factor analysis, scale reliability analysis, data verification and hypothesis testing. The final factor analysis shows factors as following: Change in accounting policies, Fair presentation and comparability of nonfinancial information, Integration of financial and non-financial information in the annual reports and clarity of estimates and assumption, Neutrality and predictive ability of the annual reports. Regression results showed that there was a statistically significant positive relationship between Change in accounting policies and quality of reporting (presented throw the Fair presentation of financial and non.finacial informations in annual report) as well as positive relationship between Integration of financial and non-financial information in the annual reports and clarity of estimates and assumption and quality of reporting. This research contributes to understanding the perceptions of qulity of reporting legal entities in BiH. It was found that both Change in accounting policies and Integration of financial and non-financial information in the annual reports and clarity of estimates and assumption intentions to usefulness of reporting of legal entities in the FiH.

Keywords: *financial report, non financial information, quality of reporting, accounting policies*

1. Introduction

Discussions have always been held about quality of the financial reporting. The problem of the quality of reporting is certainly not easy and can be analyzed from different perspectives, especially in the countries in transition such as BiH (Stanisic, 2016). About high-quality reporting is possible to speak only if it provides an objective and complete presentation of economic performance, financial position and risks which the economic society is exposed to, as well as relevant information to forecast the financial situation and business performance in the future (Ramljak, 2017). According to the law on accounting, the regular annual financial report of the legal entities that apply IFRS, i.e., IFRS for SMEs includes:

1) the Balance sheet, which presents an overview of the assets, liabilities and capital of a legal entity on a certain day;
2) Income statement, which presents an overview of revenue, expenditures and results in a particular period;
3) Reports of changes in capital, that provides information about the changes in capital of legal entities during the reporting period;
4) Cash flows, which provides information about cash and cash equivalents during the reporting period;
5) Notes to the financial statements, which contain descriptions or parsed items posted in mentioned reports in points 1 to 5, applied the accounting policies, as well as information about items that are not eligible for recognition in these reports, and are significant for the assessment of the financial position and business performance of the legal entity, as well as other information in accordance with the requirements of IFRS.

In addition, the annual report on the operations of reported entities required the following:

1) credible view of the development and results of the operations of the entity, and particularly the financial state in which it is located, as well as the data relevant to the assessment of the condition of the assets of the entity;
1) description of the expected development of entity in the coming period, changes in business policies of the company, as well as the main risks and threats which it is the business of the entity is exposed to;
2) all important business events that occurred after the expiration of the fiscal year for which the report is prepared;
3) all significant dealings with related parties;
4) activities of the society in the field of research and development.

Classical financial reporting does not meet the information needs for decisions in the new economy, which has led to the development of new models of business reporting. Users are interested in assessment of the future of business enterprises, and their management need to present and such information, not only for the assessment of the past and the present (Piljic; 2016;). A Committee of the American Accounting Association for financial accounting standards gave "recommendations regarding the release of non-financial performance", in 2001. This Committee, together with the FASB and other professional organizations, is noted that the rating-financial performance can be extremely useful for the management of the company, the owners and the other stekeholders.

There are many researches about exceptional importance of the release of non-financial information, as well as to the traditional financial measures have less significance for timely reaction to changes in the company management conditioned by the "new economy". It was pointed out that the financial measures of performance are turned to the past and that they are not sufficient for the projection of future performance of the company. The need for reporting non-financial performance, also, is conditioned by and thus that some companies adopted models that take into consideration non-financial measures. Investors, especially, require reporting in the form of models that include and non-financial performance measures, in addition to financial, that can be used in the process of formulating or redesigning strategies of the company. Some researches expire possibilities of the use of non-financial information for predicting future financial performance. They has shown that the current non-financial performance can be significant for investors and creditors, which its decisions were based on the expected future financial performance. Common include financial and non-financial performance can ensure a better insight into the operations of a company (Piljic, 2011).

The subject is obliged to decide, taking into account all the relevant facts and circumstances, how to merge the information in the financial statements, which include and Notes. The subject must not reduce the intelligibility of its financial statements by the insignificant information obscures significant information which brings together significant items that have a different nature and function (Salihovic, 2017). A significant role in the quality of financial reports have adopted accounting policies. The choice of accounting policies is a multi-dimensional issue whose effects ripple through the contents of the financial statements, but also on the assessment that in the name of investors and lenders are performed by financial analysts and rating agencies (Piljic, 2017).

Investors and lenders do not accept the financial statements just like that which presents them to management, but they are trying to get into the quality of examining and taking notes, they get a clearer picture of the performance that are the product of the accounting policies (Pijic, 2017).

The objective of this research is to analyse the usefulness of reporting of legal entities in the Federation of Bosnia and Herzegovina. In order to realize the objective of this research, the study will be structured in the following way. After Introduction, in the second part, there will be given literature overview which includes review of existing articles with the topic that includes financial and non-financial reporting. Also, main hypothesis will be stated. In the third part, empirical research will be described together with explanation of the process of research, measuring scales as well as research samples. The fourth part will delineate data analysis including factor analysis, scale reliability analysis, data verification and hypothesis testing. The fifth part will provide certain discussion about this paper which will be followed by specific conclusions.

2. Literature review

Many theorists are engaged in research in connection with the quality of the financial statements.

According to the law, all legal entities should submit prescribed financial statements. The financial statements should provide the necessary information for making business decisions. The question arises as to whether the financial statements are of sufficient quality to satisfy their purpose.

There are many researches that classical financial reporting does not meet the information needs for decisions in the new economy. Also, there are many researches about exceptional importance of the release of non-financial information. A significant role in the quality of financial reports have adopted accounting policies. The choice of accounting policies is a multi-dimensional issue whose effects ripple through the contents of the financial statements, but also on the assessment that in the name of investors and lenders are performed by financial analysts and rating agencies.

The objective of this research is to analyse the usefulness of reporting of legal entities in the Federation of Bosnia and Herzegovina.

In this paper I was guided by the research that is conducted on the same topic in South Africa (Padia, Maroun and Olandzobo, 2014).

These authors presented prior literature which was the basis for the developing of the research instruments.

I was guided by the research issues from this work, and I've created a questionnaire with the same issues with small adjustments. Customizing the questionnaire was conducted for transactions with related parties. Namely, according to IFRS 15 B87 there is a requirement to present revenue from contracts with customers in the parse the categories that describe the way in which economic factors affect the type, amount, timing and uncertainty of income and cash flows. It is especially important to publish the income of the related parties.

The questionnaire was distributed to the professionals from the accounting profession. The aim was to examine the topic of quality financial reports with reporting entities in Bosnia and Herzegovina. The paper deals with the issue of reporting with special emphasis on the reporting of non financial information.

3. Hypotheses development

The accounting policies have a special importance for the quality of the financial statements. According to IAS 8, the Management Board should define accounting policies that enable the application of all the requirements of all IASs / IFRSs so that they accurately represent the results and financial condition of a legal entity, reflect the economic substance of events and transactions (and not only their legal form), to be neutral and complete in every respect. In the preparation of financial statements, entities are required to comply with adopted accounting policies and to make the most significant disclosures in the Notes to the financial statements. Thus (Ramljak, 2011) analyzed the impact of accounting policies on the quality of financial statements. Also, this issue was dealt with by other authors (Svigir, 2009, Ramljak 1999.). In this regard, the following hypotheses is proposed:

H1: *Change in accounting policies is positively related to fair presentation of financial report and nonfinancial information.*
H2: *Integration of financial and non-financial information in the annual reports and clarity of estimates and assumption is positively related to fair presentation of financial report and nonfinancial information.*
H3: *Neutrality and predictive ability of the annual reports is positively related to fair presentation of financial report and nonfinancial information.*

4. Empirical research

4.1. Research process and measuring scales

A structured questionnaire was consisting of 20 questions. Scale used in this questionnaire was Likert type scale. Similar to a study by Van Beest et al. (2009), a five-point Likert scale was used, ranging, in general, from a low (1) to high (5) perceived level of usefulness (Abadir, 2005; Groth & Bergner, 2006; Azam, Warraich & Awan , 2011). Initial descriptive statistics (mode, median and mean responses) were generated, using a statistical programme (SPSS). Thereafter, the data was summarised and aggregated into different 'themes' or factors. Collected data were analyzed in SPSS 21.0 statistical program. There were no any missing values to deal with, considering that all questions were obligatory for answering.

The questions are given in the following table:

Table 1: Questionnaire items

How much you agree or disagree with each of these statements using the scale provided below. Write the number that best indicates how you feel in the space next to each statement.					
strongly disagree strongly agree	1	2	3	4	5
R1. Presentation of information on the future activities of the entity (through Notes, the business report, etc.) helps users in predicting the future of the company. R2. Non-financial information (such as the views of business, strategic/operational goals, business opportunities and risks) complement with the presented financial information. R3. The additional disclosures in the Notes connected with the transactions with related parties (e.g. about related parties, the criteria of connection revenues and expenditures during the period, receivables and commitments from the previous period, etc.) are useful for different interest groups. R4. The information presented in the financial statements are in accordance with those that are presented through the publication in the annual report on operations, and Notes (related to the assessment of the expected future development, objectives and policies of the status of a legal entity in connection with the the management of financial risks, activities with related parties, and accounting policies, etc.). R5. The annual report provides interested parties to assess the long term and short term					

performance of the company, as well as its sustainability.

F1: Notes presented significant assumptions and estimates that were used when drafting financial statements.

F2: Summary of the accounting polices and an explanation in connection with the choice of accounting policy is given in your Notes.

F3: Entity presented significant business events (with negative and/or positive outcomes) in its annual reports.

F4: Presented strategy, values, risks, policies, risk management, assessment of expected future development, objectives, and policies of a legal entity are connected to the management financial risks, activities with related parties, accounting the financial performance of the company are in accordance with the real state.

F5: Published non-financial information corresponded to the published financial information contained in the annual reports and adopted accounting policies.

C1: Entity published changes and adjusted retroactively items due to changed accounting policies and adjusted retroactively items due to material misstatement updates from previous period.

C2: You adequately explain the changes in accounting policies and their implications for the appropriate balancing entries in your notes and adequately explain the error corrections and their implications on the appropriate balancing entries.

C3: The information presented in the Notes are comparable from period to period.

C4: Information presented in the financial statements are comparable with information supplied to other entities (eg. The tax authorities).

U1: The information presented through Notes, the annual report on operations and accounting policy are well organized and presented (in terms of content, structure, cross links...)

U2: The Notes are useful in the sense of presenting additional information necessary for the understanding of financial reports (Balans sheet, Balance of success, Cash flows and Reports of change in the capital).

U2: Accounting policies are useful in the sense of presenting additional information necessary for the understanding of the Balans sheet, Balance of success, Cash flows and Reports of change in the capital.

U3: Additional information (such as a glossary, structure, cross connection) contributes to the understanding of the financial statements?

T1: Deadline for the presentation of financial statements (28.2.) and operations with related parties (30.3) in relation to in relation to the reporting period (31.12.) from the point of view of interested users is appropriate?

Source: Author's illustration

4.2. Research sample

Empirical research was conducted on a sample of 49 professionals from the accounting profession. In order to collect the necessary data and for the purpose of this study, a questionnaire was distributed to professionals as an online survey using Limesurvey software using mailing lists. Data was collected at the beginning of April 2018. Respondents' demographics are shown in below:

Table 2: Respondents' Demographics

Item	Frequency	Percentage
Sex		
F	37	75.5
M	12	24.5
Education		
Some secondary	-	-
Completed high school	-	-
Some additional training	-	-
Completed undergraduate	40	81,6
Postgraduate completed	7	18,4
Main Area of work		
Accounting	49	100

Source: Author's illustration

4.3. Research Findings

First we check the eligibility of the correlation matrix. It is necessary that the Kaiser-Meyer-Olkin Measure of Sampling Adequacy value equal to or greater than 0.6; in our example was 0.773.

Since factor analysis uses the correlation between variables, before the start of the procedure should be checked whether the variables in correlation and is used for this purpose, Bartlett's test (tests the null hypothesis that the interkorelations matrix of the variables included in the procedure of the identity matrix that is,. that all of the correlations between the variables are equal to zero).

If Bartlett's test is not a statistically significant application of factor the analysis makes no sense (except strong theoretical justification). The results of Bartletovog tests (we're looking Sig.); p there is a 0.001 < statistical significance. Which means that we can move on (chi-square = 427.184, df = 153).

We emphasize that the authors of the paper that served as the basis for this research provided certain limitations that are listed below.

"Despite the reliability and validity safeguards, however, this research is not without its limitations. Firstly, the research examines the perceptions of a relatively small number of experts. On the one hand, this is an inherent restriction, given the limited number of individuals knowledgeable about IFRS. A relatively small, purposefully selected group of experts is also used to ensure that only informed responses are considered (Cohen et al., 2002; Creswell, 2009; Maroun, Turner & Sartorius, 2011), although this means that responses are not representative of the entire population of stakeholders (Azam et al., 2011; Hussey & Hussey, 2003). Secondly, the factor analysis only summarises the perceptions of respondents, aggregating these under six

themes or factors. The method does not provide a quantification of reporting quality or usefulness. Rather than seek to devise an objective scale for measuring these traits, the article is influenced by a more interpretive approach, where the researcher is involved in the development of the research questions and the analysis of the data, based on interpretation of the underlying literature. In other words, although a quantitative method is used to evaluate annual reports, the purpose is not to 'quantify' measures in a positivist sense but rather to summarise the views of a group of experts."

We conducted exploratory factor analysis, using method of principal components analysis, with Varimax rotation. Kaiser-Guttman rule is used and according to which all the factors that have an eigenvalues greater than 1 are retained. Five factors are extracted and they explain 72.936% of the total variance. Table 2 shows the resulting factor structure with Varimax rotation of factors, factor loadings greater than 0.5 are highlighted. Also, questions R1 and C4 could be problematic because they had loading above 0,5 for both factors, so it is decided not to use those questions as a Factor for the purposes of this analysis. Since the factor in connection with *detail and timeliness of the annual report* loaded on the single suffix (T1) was not taken into consideration.

In our example, we Cronbach's alpha is 0.906, which indicates a high level of internal consistency for our scale with this specific sample.

The final factor analysis table is presented in table below.

Table 3: Factor analysis

Variables	Factor				
	1	2	3	4	5
C1: Entity published changes and adjusted retroactively items due to changed accounting policies and adjusted retroactively items due to material misstatement updates from previous period.	.741	.037	.133	.280	.197
C2: You adequately explain the changes in accounting policies and their implications for the appropriate balancing entries in your notes and adequately explain the error corrections and their implications on the appropriate balancing entries.	.631	.282	.152	.517	.017
C3: The information presented in the Notes are comparable from period to period.	.739	.143	.235	.068	.172
U1: The information presented through notes, the annual report on operations, accounting policy are well organized and presented (in terms of content, structure, cross links...)	.609		.191	.426	-.329
F4: Presented strategy, values, risks, policies, risk management, assessment of expected future development, objectives, and policies of a legal entity are connected to the management financial risks, activities with related parties, accounting the financial performance of the company are in accordance with the real state?	.318	.765	-.010	.222	.182

F5: Published non-financial information corresponded to the published financial information contained in the annual reports and adopted accounting policies.	.189	.844	.189	.156	.064
R2: Non-financial information (such as the views of business, strategic/operational goals, business opportunities and risks) complement the presented financial information?	.076	-.048	.737	.323	.222
R3: The additional disclosures in the Notes in connection with the transactions with related parties (e.g. about related parties, the criteria of connection revenues and expenditures during the period, receivables and commitments from the previous period, etc.) are useful for different interest groups.	.141	.082	.837	-.171	-.045
F1: Are explained in the notes/presented significant assumptions and estimates that were used when drafting financial statements?	.397	.228	.612	.306	.011
F2: Summary of the accounting polices and an explanation in connection with the choice of accounting policy is given a in your Notes?	.259	.251	.179	.622	.423
F3: Entity presented significant business events (with negative and/or positive outcomes) in its annual reports.	.198	.145	-.027	.811	-.012
T1: Deadline for the presentation of financial statements (28.2.) and operations with related parties (30.3) in relation to in relation to the reporting period (31.12.) from the point of view of interested users is appropriate?	.063	.043	.102	.089	.877

Source: Author's calculation

Table 4: Loading Factors

Factors	N	Variables correlated to factor	Cronbach's alpha	Mean	Std. Dev.
1: Change in accounting policies (CAP)	49	C1, C2, C3,U1	0.854	3.404	0.155
2: Fair presentation and comparability of nonfinancial information (FPC)	49	F4, F5	0.824	3.435	0.095
3: Integration of financial and non-financial information in the annual reports and clarity of estimates and assumption (IIR)	49	R2, R3, F1	0.711	3.993	0.307
4: Neutrality and predictive ability of the annual reports (NPR)	49	F2, F3	0.660	3.565	0.000

Source: Author's calculation

4.4.   Hypotheses testing

Multikolinearity
A multivariate analysis of the outlier discovery involves analyzing the multidimensional position of each variable in relation to some common points (Hair et al., 2010). The Mahalanobis D2 method is used to measure the distance of each observation in a multidimensional space relative to the center of the mean values of all observations, counting the value for each observation regardless of the number of variables. The value of Mahalanobis D2 / df was calculated and the threshold used was 3.50 (Hair et al., 2010, p. 67). The table with the results of the Mahalanobis method of the outlier detection is given in Appendix A. The multivariate analysis did not show the existence of an outlier. Based on the results of these analyzes, all observations are retained and will be subject to further analysis.

Also, the Mahalanobis Distances score is considered and it does not exceed a critical value. Based on those results, it is possible to confirm that there are no outliers.

Normality

The data were tested on the assumption of normality using measures of skewness and kurtosis. For approximately normal distribution, the skewnes value should be close to 0, and the Kurtosis value is close to 3. Skewness measures for all variables are negative (Appendix B), which means that the distribution of data is shifted to the right (Hair et al., 2010). there is not much deviation, and we can use regression.

Homogeneity

Homogeneity relates to the assumption that dependent variables show equal level of the variance for all analyzed variables (Hair et al., 2010). Homogeneity was tested by using Breusch-Pagan test whose zero hypothesis is the existence of homogeneity. After conducted regression according to this test, the result -square .665 was obtained. Hence, the model explains 66% of the variance meaning that zero hypothesis cannot be rejected. In other words, the results suggest the homogeneity of the data.

Kollinearity

However, in the analysis of collinearity, it is necessary to take into account the interconnection of the abilities that are the subject of this research. Collinearity was tested by calculating the variance inflation factor (VIF) for each of the predicate latent variables (Hair et al., 2010), after which the values obtained were compared to the defined maximum threshold. The threshold value of VIF in this work will be 10. This is in accordance with the attitude of Hair et al. (2010, p. 204) who claim that the usual threshold of the VIF is 10.

Multiple regression modeling was conducted to test the hypotheses proposed by this study. The Table bellow presents the results of the regression modeling.

Table 5: Regression Analysis Results

Model	Hypotheses	Parameters Estimates	R^2
M1	CAP → FPC	0.561* (0.101)	0.405
M2	CAP → FPC IIR → FPC	0.447* (0.109) 0.375* (0.166)	0.467
M3	CAP → FPC IIR → FPC NPR → FPC	0.342* (0.126) 0.320*** (0.166) 0.196 (0.121)	0.497

Source: Author's illustration
Standard errors are reported in parentheses.
*, **, *** indicates significance at the 99%, 95% and 90 % level respectively

The R-squared or the coefficient of determination for the model is 0.497 which means that 49.7% of the variables in FPC are determined by the predictor variables (perceived easy to use and perceived usefulness) while 48.8% of the variation is caused by some other factors that are not examined in this study.

We can conclude that the quality of adopted and applied accounting policies is directly related to the quality of financial reporting. Also, the content and manner of publishing non-financial information (IIR) affects the quality of financial reporting at the level of significance p <0.1. Neutrality and predictive ability of annual reports (NPR) has a positive impact on the quality of the financial statements that manifests itself in a fair presentation of the decision-making information (FCP), but it is not significant. However, it can be concluded that it contributes to the model by increasing R2.

Regression results showed that there was a statistically significant positive relationship between Change in accounting policies and quality of reporting (presented throw the *Fair presentation of financial and non.finacial informations in annual report*) as well as positive relationship between *Integration of financial and non-financial information in the annual reports and clarity of estimates and assumption* and quality of reporting. Regression equation can be presented as:

$$FCP = 0.474 + 0.342 * CAP + 0.320 * IIR + 0.196 * NPR + \square$$

5. Conclusion

This research contributes to understanding the perceptions of qulity of reporting legal entities in BiH. The accounting policies have a special importance for the quality of the financial statements. In this regard, the following hypotheses is proposed:

H1: *Change in accounting policies is positively related to fair presentation of financial report and nonfinancial information.*

H2: *Integration of financial and non-financial information in the annual reports and clarity of estimates and assumption is positively related to fair presentation of financial report and nonfinancial information.*

H3: *Neutrality and predictive ability of the annual reports is positively related to fair presentation of financial report and nonfinancial information.*

We conducted exploratory factor analysis and presented four loading factors as following:

1: Change in accounting policies (CAP)

2: Fair presentation and comparability of nonfinancial information (FPC)

3: Integration of financial and non-financial information in the annual reports and clarity

of estimates and assumption (IIR)

4: Neutrality and predictive ability of the annual reports (NPR)

We tested hypotheses in respect to multikolinearity, normality, homogeneity and kollinearity. Multiple regression modeling was conducted to test the hypotheses proposed by this study.

We concluded that the quality of adopted and applied accounting policies is directly related to the quality of financial reporting. Also, the content and manner of publishing non-financial information (IIR) affects the quality of financial reporting at the level of significance $p < 0.1$. Neutrality and predictive ability of annual reports (NPR) has a positive impact on the quality of the financial statements that manifests itself in a fair presentation of the decision-making information (FCP), but it is not significant.

So, we can conluded that it was found that both *Change in accounting policies* and *Integration of financial and non-financial information in the annual reports and clarity of estimates and assumption* intentions to usefulness of reporting of legal entities in the FBiH.

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THE EFFECTS OF RELIGION ON CONSUMER BEHAVIOUR IN INSURANCE

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Abstract

There are many indicators that effect or can effect the purchase of insurance, including religious beliefs. Religious interpretations of insurance never had only one answer, only one interpretation. Some are sharply opposed to insurance and considered to be a lack of faith in God while others have an opinion that only life insurance is forbidden. There si also a third party whose interpretation is adjusted to a modern time they live in. Through the development of society risks got bigger and that changed many of the previous interpretations of religion when it comes to the purchase of insurance. However, in developing countries and countries that have emerged from war conflicts like Bosnia and Herzegovina, there is a return to religion because religion is often confused with nationality. This paper examines if and to what extent religious beliefs affect consumers in Bosnia and Herzegovina on their decision to purchase insurance.

Key words: religion, religious belief, consumer behavior, insurance, purchase
JEL classification: G22

1. Introduction

The relationship between religion and insurance is still a controversial topic. There are so many different opinions on the scale from complete ban to incitement. In this paper we will see how and why religion and insurance have appeared and how they develop. Religion has historically had a negative attitude towards insurance, especially to life insurance - many religious interpreters claim that buying insurance policies is a loss of faith in the protection of life provided by God.

There are many factors that, to a major or minor extent, effect the purchase of the insurance policy, one of them is religion (Satrovic, 2018; Satrovic and Muslija, 2018). Here we will elaborate the views towards insurance that three most influential religions of the world have. Those are: Christianity, Islam and Judaism. Islam is the strictest when it comes to insurance, however, Islam has produced Tekaful - Islamic insurance, according to Sharia principles. So, it is certain that Islam understands the basic idea and the need for insurance.

We will make a comparison of classical (commercial) and Islamic insurance. We will see what kind of role religion plays today in modern society, whether more or less than before and what are the tendencies. We will investigate if and to what extent does religious beliefs really influence

the purchase of the insurance policy in the life of people in 21th century. In order to obtain as much information as possible about the influence of religious beliefs on the purchase of the insurance policy, we did a survey, a research whose results will be shown later.

2.The occurrence of religion and insurance

Both religion and insurance, in their original, early, primitive forms, had great influence on people and their development. There is a lot of definitions of religion, but a definition that examines the essence of what religion is and what religion provides to believers is that religion is a set of answers to existential questions (Scheve and Stasavage, 2006). These questions, every human being is faced with sooner or later, what is the reason we exist, what is our purpose and role, what do we do here, why this really happened, could it be different or it must have been the way it was and we can do nothing to change it.

The role of religion is to distinguish good from the bad, to instruct how to behave and what is forbidden, what is morally and what is not. It can be said that religion was a product of the human mind as a protection against everything that made people insecure and frightened. Religion itself was light in the dark and a right way through unknown streets of life. People always turn to God when is the hardest, as an exit, as a salvation. Religion has made mankind secure. Thus, a spiritually secured man is difficult to decide on the purchase of an insurance policy. He believes, he is protected by God and no one or nothing can harm him.

If an accident comes, it is from God and God will help and provide salvation. After all, whatever happens to us is given by God, it is God's determination and we should accept it. This is an ideal of faith and belief, and it could take place when everything goes the way we want it, when we do not meet problems or if we are absolutely immune to all the problems and all external factors which is impossible because we are just human beings. The reality is that we face different challenges on a daily basis, problems that we do not accept so easily, we struggle and we are trying to find a solution. As society grew more and more, as society develop, there were more and more challenges to face.

When, for example, a man began to trade, and by transporting goods on ships, he noticed that all ships did not arrive at the final destination and that the merchant whose ship had had the least luck loses everything. Realising that, a man came up with the idea that he could reduce the risk, distribute the goods to all ships. In that case, if an accident happens, all merchants share a loss which is smaller now and will not jeopardise their business, they shared solidarity.

Life insurance provides benefits, there are laws that ensure it, while religion is based on assumptions. The occurrence of insurance has made great progress for people, facilitated their daily work, reduced loss, reduced stress, improved work and improved life. Religion remained, but man realized that he could not only trust in God, because he had the experience to see that the accidents were happening, so he had to do something to help himself, to think about his future, to come up with the plan if something bad happens.

All religions promote helping someone in need, who is going through a difficult period, before the occurrence of classical insurance, people - members of the same religious community (this is the most common in Christianity) have been organized to collect funds for their member in need.

This also strengthened the sense of religious affiliation because believers knew that they could count on the church to provide them with the necessary material, financial and emotional support. That assistance was delivered directly from the church, from religious community. For this reason, more religious people were less likely to buy classical insurance, not because insurance was forbidden, but because they organized in their religious community something that was the real practice of insurance - collecting money for people in need. What insurance does - it provides assistance or financial protection when we need it most, either in case of fire, flood, car theft, loss of a family member, serious illness, travel... Of course, it is not a free help because we actually buy it in advance. We had to give something away when we had the opportunity for that, so that we could get help at the right time. All religions encourage believers to secure the future in the sense of securing their offspring a beautiful life, not leaving them in poverty. All of this leads to the insurance we know today.

2.1. The appearance and development of religion

Religion appeared when a man realised that many things happen outside his control, that he can not influence them, these were natural phenomena: rain, wind, thunder, lightning, floods, droughts, heat, cold... To explain themselves that, people began to believe that there is something supernatural, an upper force, something that has the power to rule over nature and over humans. People from the beginning believed in something, first in some supernatural force, then in the ghosts, then in several Gods and ultimately in only one God. Chronologically there are four forms of religion: animism, toteism, polytheism and monotheism. Monotheism is a modern form of religion, a belief in one God. These religions are widespread throughout the world, each has its founder. Religion has a task and should provide peace and consolation through faith. There is also a different division of religion, to the religious or ascending, which were created by people and descended or published by God, which are Judaism, Christianity and Islam. Each religion has its own history, place of origin, founder, holy book, rituals, prayers, morality.

Religion is not based on human views and their opinions and attitudes but in God's Word in sacred books. Religiousness is a subjective, indivudual relationship to God. Today religiosity or religious beliefs do not effect the behavior of man, man decides what he wants and what he will not accept from religion, he decides whether it is good or bad for him. The influence of religion in the modern world is weakening. With the economic development of the country, this is more noticeable.

In developing countries and countries that have emerged from war conflicts, religion has more power and that can be a source of conflict, but it all speaks about the underdevelopment of the country, about poverty and low awareness in education both basic and financial (Satrovic, 2017). What is significant for this region – Balkan, is that during the former Yugoslavia, in the era of socialism and communism, religion was rather suppressed from life, from society. So, there was a secularization that is defined as the human liberation from mythical, religious thinking. The development of science has declined the influence of religion. Secularization in the modern world is most often interpreted as something positive, man becomes free, religion is excluded from life. Science rejects belief in upper power and everything that can not be neither proven nor explained. Science has actually given explanations for the phenomena that led the ancient people to believe in a higher power because they could not explain rain, thunder, wind etc. What is noteworthy is that, as people are less educated, they are more religious and they absolutely respect and do

everything that religion prescribes. In Bosnia and Herzegovina, a large percentage of the illiterate population, most of whom are familiar with the Arabic letter, are reading the Qur'an, because people didn't let their female children, after completing four grades of primary school, to continue their education. They were fearing that school and society might "spoil" them. More educated people tend to read different literature, a higher level of education is giving people wisdom and they tend to think more, they have more understanding and tolerance for the different and „other".

Ofcourse, this does not mean that educated people are not believers only because they understand much more what religion actually is, because they live in accordance to modern times and make their own decisions about whether something is good or bad for them. The war has made people turn to nationalism, to identify and connect religion with the nation, to hate people who are not the same religion and nation as they are. The breakdown of socialism and the former Yugoslavia has restored traditional religiosity in all countries to which Yugoslavia divided. There has been a desecalization of religion, which is still widely used today for political purposes. "Religion is most effective in times of crisis, difficult times, there is a Latin proverb - Res adversae admonent religionem, which means that disaster encourages religion."[16] Religion was a refuge from the horrors brought by war in this area. Also, with the democratization of society and freedom of manifesting religion - the religiousness that may have been suppressed by communism – has grown stronger. Religion nowadays has a much bigger significance compering it with a period of former Yugoslavia.

Today, many societies are deeply religious. Religion has not lost significance in the modern world, it has a special place in the life of man in 21th century who is facing the increasing challenges in modern society and time, new technologies, an accelerated lifestyle, alienation, increasing social differences among people, terrorism and distrust. Religion is a shelter in challenging times but religion, in order to survive, will have to adapt to the modern way of life. This will make life easier for a man who is torn between modernism and tradition. Much has changed to this day and, accordingly, the interpretations of religion must be more flexible and adjusted to the time when interpreted.

Currently, the largest religion in the world is Christianity, with about 2.1 billion people or 32.5% of the population. However, some research shows that Islam is the fastest growing religion and that by 2070, it could be the number one. Today, around 1.5 billion Muslims live in the world and that is about 23% of the population. Atheists, people who do not believe in God, have about 1 billion and take 16% of the population. Beyond Islam, the largest is Hinduism (about 900 million believers), then China's traditional religion (about 800 million believers), Buddhism (500 million believers), followed by popular and traditional African religions. In this paper we will deal with Christianity, Islam and Judaism as the three most common religions in Bosnia and Herzegovina. Judaism - the Jewish community, has been held up to this day in Bosnia and Herzegovina, where they arrived at the end of the 15th century after the persecution from Spain. There are not many of them (about 1000 believers), but in Sarajevo there is a synagogue and a Jewish cemetery that talks about their long-standing presence. But it should not be forgotten that Judaism is valid for the oldest religion in the world and that it is believed that the Jews survived so many years in spite of all the persecutions and extermination attempts due to the strong faith that binds them.

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[16]Bakrač V. (2012) Religiousness of youth in Montenegro - Dissertation, Belgrade University, p.108-111

Judaism is also one of the most influential religions in the world. For these reasons we have included Judaism in research.

2.2. Occurrence and development of insurance

"Insurance has two basic features: transferring or shifting risk from an individual to a group and a loss distribution to all members of the group."

"Insurance represents a method of transferring a risk to an insurer that assumes the obligation to compensate for potential losses from a fund formed from the collected insurance premiums."

People were aware of the importance of risk sharing in the ancient times. In China, 3,000 years ago, merchants who carried goods to ships knew that not all ships would reach the destination. For this reason they made a plan - they distributed goods to all ships, so when the ship gets destroyed they all share a loss, not just an individual, an unfortunate one, whose goods traveled precisely on that ship that was unable to reach where he needed it.

Fire protection had its beginning in Germany in 1591 when a Fire Protection Association was established - Fauer Casse. However, the most powerful development of fire insurance takes place in 1666 in London when a huge fire burning the city for five days. Recognizing the importance of fire insurance, English doctor, Nicholas Barbon, was the first to enter the job of securing newly built objects from fire.

When we talk about the oldest form of accident insurance, it is insurance against accidents. Since 1848, the protection of rail passengers has been sold in Great Britain. In 1886, the first insurance policies for liability covered the employer's responsibility towards the employees.

In 1898, the car insurance policy was first issued in the United States. Reinsurance appeared for the first time in maritime insurance.

The development of life insurance is also related to maritime traffic in order to be able to pay off the ransom in case of capturing. These were short-term insurance policies because the long-term needed accurate estimations of the death of the insured. The first life insurance policy was made in 1536 and in 1693 the first mortality tables were made, which were based on statistics of deaths in the period from 1687 to 1691.

In the 18th and especially in the beginning of the 19th century, insurance is increasingly developing, actuarial charts begin to apply. It should be noted that at that time, James Dodson (1705-1757), a British mathematician, studied life insurance and laid out the basic principles for life insurance.

In modern business and operating conditions, the insurance industry is a very important economic activity that provides protection against risks, provides security and protection of capital. Risk is a daily part of life, it is always there, we live with it, we work with it, and it is therefore very important that safety is treated as a priority, to use insurance, but also to take all necessary actions to ensure that the insured case does not happen.

3. The attitude of religion about insurance

Religions or religious interpretations versus insurance never had only one answer, nor only one interpretation. This topic is quite controversial precisely because of the different interpretations. These interpretations have changed through history. Some were sharply opposed to insurance and considered him to be an unfaithful act that ceased faith in God, others considered that only life insurance was forbidden until the third party think that we should adjust interpretation to the modern times in which we live and do not consider insurance as the opposite of faith. Insurance attitudes have changed over time, as science and technology have advanced, the world has become more and more modern, the huge difference between the past and the present, how difficult it is to imagine what is waiting for us in the future, so insurance is becoming a necessity and religious interpreters are becoming more and more tolerant towards insurance by seeing its good sides. Indeed, the goal and effect of insurance is what religions propagate - care for the offspring, for children, family protection. These are the values which all religions are based on - the family always comes first.

In prehistoric times, the man was a hunter who hunted for his family to bring lunch. With the development of society, a man no longer goes hunting, but today he has more stress than before, making it harder to make money and bring bread to his family's table. Nowadays, people more often get sick from various diseases, no matter how old are they, insurance has become a need, a relief, a help, a tight sleeping. It is clear that the Holy Books do not directly refer to insurance but people make conclusions by studying them and hence different interpretations. Below we will examine what are the interpretations of today's biggest and most influential religions about insurance.

3.1. Christianity about insurance

The Church did not support the purchase of life insurance, it was considered incompatible with the belief in God and His preaching. Although the Bible does not directly talk about insurance, the various authors in their own way emphasized as inadmissible and interpreted the texts of the Bible in their own way and justified their claim. In 1860, Roswell F. Cottrell, a prominent author and believer, claimed that the text in the Bible: "The one who hates safety is safe" means that any kind of insurance is forbidden. God has obliged Christians to study the Bible and come to their own religious beliefs on any issue that is not explicitly stated in the Bible. They need to wonder if a family foster dies, who will take care of family? Will the family with the death of a family member remain without resources and be confronted with a financial disaster? Will the family in that case be forced to take help from others and be dependent on others? On all these questions, Christians should give their own answers in order to reach their own personal opinion. However, with development of society, the risks grew, and a large number of risks changed many of the opinions, the previous interpretations of the Bible were corrected so that the property insurance of fire, storm and theft was accepted and allowed. Also a new interpretation was launched that the insurance of assets differs from life insurance and is not prohibited. Life insurance was still considered contrary to Christian principles, God is the one who will provide and promised the immortal life of the soul. Every believer needs to know that what is not explicitly stated in the Bible, allowed or prohibited, requires that each Christian examine, analyze, and take his stand. In addition, as the believers say, they should ask God to show them the right way, to show them how to act. Bible principles should guide the Christian and they say that the law is respected - so

if the law requires insurance, then it should be taken and it is not disobedience to God. God has ordered man to take care of his family, that care can be insurance and should be taken. Purchase of life insurance can be interpreted and acceptable from God as pre-planning, as a concern for the family if the early death of the foster family occurs, if illness happens etc. But it can also be interpreted as a lack of faith, disbelief in God's protection, love for money and gambling. Christians should develop their personal opinion if something is or is not in accordance to Bible. We should appreciate the beliefs of others, but our own beliefs are more important than others. From this it follows that different people - believers will come to different beliefs, everyone has the right to his own opinion and his conviction, his explanation. Everyone is responsible for his actions. Everyone will die and sometimes people get sick. That is why people have been saving money for an old age and illness, and in the event of an early death, they leave something to the family, to care for them and not to be considered unbelievers, but they have fulfilled the obligations God has given them, family care. It is a wise management of money and has nothing to do with distrust in God. True believers live responsibly towards God and do not wait for a miracle to happen and give them everything they need. Believing that God will care for man does not mean that man does not need to take care of himself. People should act in a responsible way. When the insurance is properly used, it can help the family in illness or disability, it can help the family due to the death of the family's survivor to continue living, and when it comes to property insurance, compensate for the damage caused by natural disasters or burglary. God wants the family to be protected and every Christian is obligated to provide the family. Life insurance gives peace to a man that his family will be secured, that he will not depend on others if something happens to him. Buying insurance is not a belief in God, but smart planning and preservation of property, protection of property from various risks, and God requires believers to take care of their family and property, to provide the financial means with which the family can continue to live if something happens to him . Planning the future is not a sin. Illness, accidents, fires, natural disasters and disasters require a lot of money if they hit a person and their consequences can be minimised by insurance. Religious beliefs of some people go so deeply that they believe in the spiritual belief that God will protect them all, and when an accident happens, they are willing to accept the help of other people, rather they will depend on others than to take insurance. Insurance is not a protection against death, it does not prevent death or disease, insurance provides compensation, costs that can arise and which can not be paid, ensures that the family gets on their feet if something happens to the foster. The Bible speaks about the need for saving for the future and teaches that saving money is a wise practice.

There is a lot of examples in practice where Christians are convinced that life insurance is a smart planning that many families have saved from hunger and poverty after the illness or death of a family member. The insurance helped them to continue to live and give even greater faith to God by believing that God showed them how to act and that they were provided with the guidance of God. Ofcourse, there is the other side when the Christians were not ensured, when they were left without anything, they again consider that it is all from God and will later be rewarded for this suffering and consider that they have acted right because their belief is that God forbids insurance, prohibits any protection except His.

3.2. Judaism about insurance

Judaism does not even have any controversy or discussion on this subject, the answer is one and clear - Judaism allows insurance, it is believed that, like everything else, insurance is given by God. Maybe it has to do with the fact that the Jews have always been traditionally businessmen,

always at the top when it comes to finances. For Judaism insurance is a legitimate job, a financial plan that is even welcome and desirable as it shows concern for the family and in no way diminishes faith. It is believed that God gave humanity a clever idea of establishing insurance for their welfare. Believers trust in God that He will provide them with money to pay the premium of insurance. People seek and receive protection from financial loss through insurance. Jews even collected money to secure city fortresses and walls as a contribution of every citizen to protect their city. The Jews always had a strong sense of community, and their religion was always kept strong. This practice exists today and Jews pay money as a donation, a contribution to the insurance of the Jewish community.

They know that people without adequate health insurance have a higher mortality rate than those who have insurance. So, insurance is also important for the survival of the Jewish community. They are aware that when a foster family dies, his children and wife remain without any protection and fall under the burden of the community, and that is why interpreters of Judaism encourage life insurance that means protecting the family what God wants and supports.

3.3. Islam on insurance

Insurance in Islam has been known since the life of Prophet Muhammad and it was part of the so-called Medina Constitution. It was used in situations where there was insufficient funds to buy prisoners or pay for bloodshed. The necessary funds were often much higher than what the borrower was able to pay. Solidarity insurance was introduced for these purposes where the members of the tribe to which the debtor belonged had taken over the debt repayment. The insurance was organized by the state, based on solidarity with the aim of helping the vulnerable side. What is important to point out is that this insurance had no commercial motives, while today's insurance companies were founded with the goal of earning profit.

We have many different opinions about commercial insurance. The first opinion is that every type of commercial insurance is banned (haram). They identify insurance with gambling and lottery. They are opposed to insurance because of the uncertainty or the unknown final outcome of the contract that is forbidden in Islam. Furthermore, as stated in the interpretation "someone loses and someone gets" - they find that the value one side loses the other gets. If damage occurs, the insured 'wins' because the paid premium is normally less than the amount of the damage paid. On the other hand, if no damage occurs, the insured loses his paid premiums. It can be noticed that when one party gets one, the other one must always lose. Who will be in this contract will be the winner depends on the probability of whether the security case will happen. "So, the first interpretation discards any type of commercial insurance, both life and non-life. The second opinion is completely opposite to the first because this group of people consider that the insurance contract is a modern contract, adapted to the modern way of life, and as such is not explicitly mentioned anywhere, and therefore is not prohibit in Sharia regulations.

The third opinion is that only life insurance is prohibited. In non-life insurance, the goal is security and protection, for example, the cost of water spillage in property insurance or the cost of car repairs in car insurance policy. Non-life insurance is permitted in the opinion of these scholars, because there is a justified need for this type of insurance. Life insurance is forbidden because the ultimate goal is money and profit (interest).

Islam does not accept contracts with elements of uncertainty, and insurance contract is considered to be that, it is not certain whether the insured event will happen. In Islam these contracts are called garar, they are uncertain for both sides and therefore are forbidden. The insured pays for something that may never happen – it is uncertain, he pays a service whose usage is uncertain. Since the insured knows if insured case happens he will receive compensation, than can encourage him to cause damage and thereby deceive an insurance company to pay him damages that are not in accordance with Islam. Otherwise, Islam believes insurance contracts contain interest, fraud, gambling and insecurity which is also prohibited. Interest in Islam is forbidden, and that is why so many people believe that life insurance is a sin. Interest is mentioned explicitly in the sacred book of the Qur'an as a sin and ban where curses are given by those who give interest, interest rates, witnesses and recorders of the interest contract. In Islam, interest is regarded as unlawful enrichment on someone else's misfortune, interest is injustice - "eating another's property" (En-Nisa, 161).

Some scholars consider that insurance is weakening and losing faith in Allah, because everything that happens is will of Allah and vain people try to be protected by insurance. They believe that one should only rely on Allah, in His grace and giving. However, it is mentioned in the Qur'an that Muhammad one day met a man whose camel run away because he did not bind it. He asked him why he had not binded a camel and the man replied, "I trust in Allah" to which the Prophet said: "First you bind a camel and then trust in Allah."

This story tells us that a person must do something to help himself and one of the things he can do is an insurance policy to secure and protect his family, not leave them without anything or worse with loans and debts. Some scholars think that men must adapt to the time in which they live, the challenges and needs of today, and insurance is certainly the way to do that. Everything can be interpreted in many ways, and insurance is not explicitly mentioned anywhere in the Qur'an, so it remains for every individual to make his own decision. It is true that Islam is the strictest in terms of insurance comparing to other religions, because insurance contracts contain many prohibitions in Islam that we have discussed above.

3.3.1. Alternative: Islamic Insurance - Tekaful

Islam has developed an alternative to classical insurance, whereby Islam as a religion is unique. Yes, commercial insurance is prohibited but the good side of insurance is recognized. The prohibited cathegories that are part of the insurance are evicted and insurance does not conflict with the principles of the sharia and at the same time meets the basic purpose of insurance. Tekaful as a model of insurance, Islamic insurance, is based on mutual guarantee.

In Islamic insurance, profit is not the most important, they put first: solidarity, help, honesty, social responsibility. Islamic finance companies would never engage in profitable but immoral jobs that could harm society.

3.3.2. Appearance, development, idea

Islamic insurance was derived from the customs that Arabian tribes had in the case of murder. If a member of one tribe was killed by a member of another tribe, the family of the one who committed the murder paid some sort of compensation for the blood that was spilled, for the loss.

The last Prophet of Allah, Muhammad, supported this practice of Arab tribes. All tribes participated in collecting money intended for damages, in the event of unintentional murder. It was a way of mutual help, solidarity in an accident. Traders from Mecca had the practice of organizing funds to compensate travel losses as well as mutual assistance in natural disasters. In the Ottoman Empire there were maritime insurance in the 18th century.

In the past twenty years, many Islamic insurance companies have been established in the Muslim countries, but also in other countries of the world. Islamic (Tekaful) insurance was the most and the fastest developing in Malaysia and then in Singapore, Indonesia, Iran, Qatar, Egypt, Jordan, Kuwait... What is particularly interesting is that Great Britain, a non-Muslim country, has become today's largest Islamic finance center, which includes Islamic banking and Islamic insurance. The Islamic insurance market has an annual growth of 20% while conventional insurance has an annual growth of 6-8%. Islamic banking and Islamic insurance became an excellent alternative to the conventional banking and insurance due to its principles, ethics and trust it enjoys, especially in last financial crisis.

3.3.3. Similarities and differences between Islamic and commercial insurance

The key difference between commercial and Islamic insurance is in interest. In Islam, interest is forbidden. Furthermore, the significant difference is that Islamic insurance is based on mutual help - helping others is the primary goal and purpose. Companies dealing with Islamic finance are extremely socially responsible. Solidarity is strongly expressed, and what is specific is that both insurance and the clients share the risk and take responsibility for unsuccessful projects.

Commercial insurance is based on a contract whereby the insured pays the insurance premium, and the insurance company pays compensation in case of occurrence of the insured event, compensating the damage. The insurance company collects premiums. The goal is profit that Islam does not support.

In the case of classical insurance, the insured pays a premium in order to receive compensation from the insurance in case of damage, but the damage does not have to happen, it is uncertain, and Islam does not allow contracts that are uncertain.

Insurance companies, collecting funds from premiums, are able to invest, invest in local communities and allocate financial resources within the country to stimulate its economic development. Insurance companies are considered to be the strongest institutional investors, play a major role in the development of the financial sector, and through it to the development of the entire economy of a country. In classical insurance, there are no restrictions in terms of investing, it is a decision of insurance company and is based on profitability, while Tekaful insurance is allowed to invest only in halal activities without interest.

Tekaful is based on the principle of mutual assistance (Ta-awun) which is a donation (tabarru). For tekaful insurance, there is a fund of insurance in which no premium is paid, but donations. Donations are exempt from interest, in fact, complete business is without interest, because interest is forbidden in Islam. Payments are considered an attachment-donation and are paid by the insured into the donation fund and at the same time they are the owners of that fund..

Donations are voluntary and the amount of payment depends on the risks. Payments or donations are considered as aid in case of damage.

Supervision over the operations of the insurance fund is carried out by the Sharia Board, which ensures that everything complies with Islam and Islamic laws. Investing is done according to the Islamic principles of economy, without interest, and only in halal activities. The Sharia Board is composed of at least three scholars, with specialized knowledge in the field of Sharia law and finance, business and economics. The members of the Sharia Committee guarantee to the users of financial services that operations and investments are halal and the money they receive is halal. If that is not the case, the sin falls on members of the Sharia Committee.

Tekaful insurance is permissible for Islam with the fulfillment of certain conditions, and some of them are: the participant of this insurance must be adult, the contract is on a voluntary basis as well as the donation, the primary goal is to help and not benefit, investments are made only in halal activities. If there are not enough funds in the fund, the damages are paid out of an interest-free loan.

3.4. Results of the conducted research - survey

The conducted survey included research on religious beliefs and the quality of insurance. Below are the results related to religious beliefs. The survey involved 217 citizens, of which 92 women and 125 men, or 42.40% women and 57.60% men. Citizens of different ages from 18 years to over 65 years, covered in Table 1 are included.

Table 1: Age of respondents

	number	%
18-25	36	16,59
26-35	58	26,73
36-45	46	21,20
46-55	48	22,12
56-65	25	11,52
More than 65 years	4	1,84
Total	217	100,00

Among the respondents, most of them have a high level of education, followed by secondary education, then masters and doctors of science, in Table 2.

Table 2: Professional training

	number	%
High school education	74	34,10
College	22	10,14
University degree	98	45,16
MR.SC. or DR.SC.	23	10,60
Total	217	100,00

Regarding marital status, 59.45% were married, followed by 32.26% who are single, 6.91% divorced, and 1.38% widowed.

When it comes to working status, 78.80% of respondents are employed, 17.51% are unemployed and 3.69% are pensioners. The remunerations of those who work are low, since 55.76% of the respondents are qualified for university education, masters and doctors of science, and 56.04% have monthly income not bigger than 1000 KM. All this indicates the underdevelopment of the country and the poor standard of citizens. Of the unemployed, 7.89% declared that they had monthly earnings of less than 500 KM. This can be a scholarship, a disability allowance, an annuity, etc.

Table 3: Monthly earnings (in KM)

	number	%
Less than 500	4	2,20
501 do 800	61	33,52
501 to 800	37	20,33
1001 to 1500	54	29,67
Over 1500	26	14,28
Total	182	100,00

When asked if religious beliefs had an impact on the purchase of insurance, 96.31% of respondents answered "No" and 3.69% "Yes". This information tells us that people create personal convictions and make conclusions as to whether something is in accordance to religion, their own beliefs are the most important. The Holy Books do not mention insurance, from which it can be concluded that it is not forbidden. The goal and effect of insurance is what religions propagate - family care, care for the offspring and family protection. With the development of society, risks have risen, and a greater number of risks have changed many of the previous thoughts and interpretations of religion compared to the purchase of insurance. The largest number of respondents belongs to religion Islam 76.04%, Catholicism 8.76%, Orthodoxy 8.29%, other religions 0.46%, while as atheists declared 6.45%.

To the question "Does your religion allow insurance?" 46.08% answered that their religion allows insurance. That insurance is not allowed answered 7.37% and did not know 38.71%. 7,84% said that their religion only allows non-life insurance. From these responses it can be seen that a large number of respondents did not know whether the insurance is allowed, but that did not affect their decision to purchase insurance. Some of those who say insurance is not allowed have an insurance policy because there is a greater percentage of those who say that insurance, according to their religion, is not allowed (7.37%) and those who say that religious beliefs influenced the purchase of insurance make 3.69%.

Questions from 19 to 25

19	I am familiar with the basic postulates of my religion
20	I behave according to religious beliefs
21	Religion is very important part of my life
22	Islamic finance operates on the basis of the Islamic Law (Sharia)
23	Islam opposes interest-bearing insurance

24	Islamic finance fosters the social and ethical component of business
25	Islamic finance advocates mutual division of risks and profits

Table 4: Results of the questionnaire for questions 19 to 25

	Answers												
	1		2		3		4		5			
Questions	I do not agree at all		I do not agree		Neutral		I agree		I agree completely		Everything	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
19	0	0,00	8	3,69	32	14,75	127	58,52	50	23,04	217	100,00
20	4	1,84	21	9,68	83	38,25	87	40,09	22	10,14	217	100,00
21	3	1,38	11	5,07	74	34,10	95	43,78	34	15,67	217	100,00
22	16	7,37	10	4,61	96	44,24	84	38,71	11	5,07	217	100,00
23	5	2,30	7	3,23	65	29,95	91	41,94	49	22,58	217	100,00
24	7	3,23	6	2,76	120	55,30	68	31,34	16	7,37	217	100,00
25	8	3,69	6	2,76	131	60,37	64	29,49	8	3,69	217	100,00

Source: Authors' analysis according to research results – surveys

Table 5: Confirmation of claims in% through questionnaire for questions 19 to 25

Questions	Rejecting			Neutral	Confirmation			Everything
	1	2	1+2	3	4	5	4+5	(1+2)+3+(4+5)
19	0,00	3,69	3,69	14,75	58,52	23,04	81,56	100,00
20	1,84	9,68	11,52	38,25	40,09	10,14	50,23	100,00
21	1,38	5,07	6,45	34,10	43,78	15,67	59,45	100,00
22	7,37	4,61	11,98	44,24	38,71	5,07	43,78	100,00
23	2,30	3,23	5,53	29,95	41,94	22,58	64,52	100,00
24	3,23	2,76	5,99	55,30	31,34	7,37	38,71	100,00
25	3,69	2,76	6,45	60,37	29,49	3,69	33,18	100,00

Source: Authors' analysis based on survey by survey

81.56% of the respondents claim that they are familiar with the basic postulates of their religion, 14.75% are neutral and 3.69% are not familiar with the basic postulates of their religion.
They act in accordance with religious beliefs claims 50.23%, neutral is 38.25%, and 11.52% of respondents disagree. A far greater percentage of respondents are familiar with the basic postulates of their religion as much as 81.56% while acting in accordance with religious princes 50.23% indicating that a much greater percentage of respondents know about religion than the percentage that behaves in accordance with religious principles. To conclude that many behave according to their own beliefs.
59.45% of respondents said that their religion was very important in their lives, 34.10% neutral, and 6.45% of respondents said they did not agree that religion is an important in their lives. For 18.35%, more respondents said that religion is important in relation to those who have declared themselves to be in line with religious principles. And here it is to conclude that the influence of religion is weak, that people create personal convictions themselves and make conclusions as to whether something is in accordance with religion.

Islamic finance operates on the basis of Islamic law (Sharia) 43,78% of respondents agree, neutral 44,24%, and does not agree 11,98%. Such a large percentage of those who have declared themselves neutral and those who disagree show how much is not known about the Islamic law (Sharia).

Islam opposes interest: 64.52% of respondents agree, neutral is 29.95% and does not agree 5.53%. Many more respondents, more specifically by 47.37%, know that Islam is opposed to interest-bearing insurance in relation to the knowledge that Islamic finance operates under Islamic law (Sharia).

Islamic finance fosters a social and ethical business component claims 38.71%, neutral 55.30%, and 5.99% of respondents disagree. Such a large number of neutral responses point to ignorance of Islamic finance by the respondents and even ignorance of those who have declared themselves to belong to Islamic religion.

Islamic finance advocates mutual risk and profit sharing, 33.18% of respondents agree, it does not agree 6.45% while declaring neutral 60.37%. This is another proof of the ignorance of Islamic finance.

4. Conclusion

Through history, religion was opposed to insurance, especially to life insurance, because it was believed that God's protection was sufficient, that it was the greatest and best, that no earthly protection could be measured against divine's – God's.

The development of science and technology made religion must adapt and interpret holy books in accordance with time. The negative attitude some scholars have towards insurance comes from insufficient knowledge of what insurance is, how it works, and what its effects are. The public should be educated about insurance and from the aspect of religion. It would be good to educate religious leaders who communicate messages to the public and who have an imapct on public. A modern world is a challenge to religion, and religion does not need to reject all but adapting to time and the basis of learning to be interpreted in conjunction with the times in accordance with the development of science and its achievements. We should accept everything that is good for a better life on Earth and which is not explicitly forbidden. Every individual - the believer is obliged to read the Holy Books and behave in the way he feels his relationship with God. We are all ourselves responsible for our actions.

God directs us, we have our minds and intelligence to prepare ourselves for good and bad times, to wisely protect our family and property. Insurance is not a substitute for God, nor a belief in God, it is the protection of a family that does not exclude God's protection; it is proper planning to provide a family that God also teaches believers. Being religious or being a believer is not a reason for not having a life insurance policy. Religion even encourages believers to protect themselves and their families, to help others. In fact, religion requires a believer to take care and provide a family, and insurance only helps him fulfill this obligation.

Today, the negative attitude of the religion toward insurance faded, the strictest is Islam but Islam is giving us alternative - Islamic insurance known as Tekaful Insurance that is adapted to Islamic mode of business and Sharia regulations. Religious beliefs have no impact on the purchase of insurance, these are individual and minor cases. Results of the survey have shown this and they are presented in this paper.

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THE ROLE OF INNOVATION POLICY IN PROMOTING COMPETITIVENESS: THE CASE OF BOSNIA AND HERZEGOVINA

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Abstract

This paper analyses the Innovation policy mix in Bosnia and Herzegovina, and explores the potential role of integrated innovation policy in building and integrating National System of Innovation. It provides, in-depth assessment of the existing legal and institutional framework, governance structure and innovation policy instruments, and identifies key policy priority areas, that are of interest in strategic policy formulation. The innovation policy in BiH is only emerging with limited focus of government authorities to design innovation policy to improve competitiveness. The paper presents the evolution of Innovation policy in BiH, and reviews the impact of persistent policy failures on the National System of Innovation. Based on the extensive literature review on the role played by innovation policy in building and strengthening comparative advantages, the paper posit that the scope and the character of innovation policy in BiH is ill-suited to stimulated post-crises recovery and real sector growth. The main findings presented in this paper are based on the qualitative research on innovation policy mix in Bosnia and Herzegovina.

Key words: innovation policy, competitiveness, transition economies, Bosnia and Herzegovina

1. Introduction

The transition from a centrally planned economy to a market economy in Bosnia and Herzegovina (BiH) was characterised by comprehensive liberalisation of the economy principally relying on market forces to carry out structural transformation. Overall, reforms intend to integrate BiH economy into the global economy, especially European economic structures. The early transition period was marked by rapid changes in the industrial structure, particularly, by the sharp deterioration in industrial output and employment. The transformational "recession" pattern came to be replaced by the period of economic recovery which gained momentum only in 1999/2000 (Silajdzic, 2006:2011) largely due to the specific circumstances of complex post-war reconstruction and conflict related consequences. From the year 1999 onwards, manufacturing was characterised by relatively high growth rates of production, albeit from the low base. The period of recovery concerning manufacturing production was accompanied by fairly high economic growth rates. Yet, economic growth in the initial years of transition was principally driven by the growth in trade-related service sector and financial market growth (Uvalic, 2013).

In 2008, when the BiH's economy was hardly hit by the global financial crisis and plunged to negative growth rates, the structural problems of the economy and the development gap that is technologically pronounced came to the fore. The limited marginal productivity gains across all sectors and small competitive gains of more dynamic (that is technology and knowledge

intensive) industries throughout the transition period (Silajdzic, 2016), explain the slow catching up of the economy. The structure of the economy has remained largely unchanged, with remarkably little changes in manufacturing industry share in GDP (around 12%). Thus, the share of private sector to GDP remains below 65%, which is the lowest among the transition economies.

The average growth rate remains low even in recent years and averaged only 1.4% between 2012-2016. Increases in domestic consumption and external demand continue to be the major driving forces of growth. As a consequence, economic growth does not affect employment (WB and WiiW, 2017). A persistent very high unemployment rate (36%) with only modest increase in industrial employment (below 50% of the pre-war level), throughout the transition process suggest important structural weaknesses of the economy. The structural weaknesses are seemingly the result of important policy failures, including innovation policy design, addressed in this paper.

This paper's main conclusion is that recent policy measures have not effectively addressed BiH's need for support for innovation and competitiveness. BiH innovation inputs and outcomes are exceptionally low by any standard, and severly inhibit re-industrialisation potential. Altough, bosnian firms' innovative activities are incremental and mostly related to technology adoption and accumulating imitative & absorptive capabilities, firms face severe constraints—both internal and external—that result in severe underinvestments in technology and adversely affect their performance including exports. Policy failures and limited technology and innovation related funding opportunities preclude technology growth and adoption. These factors affect SMEs particularly adversely. Moreover, poor policy frameworks governing innovation activities and innovation collaboration make developing sources of sustainable business sector growth and competitiveness difficult. In view of this strong policy measures are needed to stimulate private sector growth and dynamic integration of the economy.

This paper is structured as follows. In following section we provide an overview of the evolution of innovation policy in BiH with special reference to the changes in the institutional and governance structures in the post-Dayton period. We then present a brief literature review and discuss the rationale for innovation policy. In sections 3 and 4 we provide an in-depth assessment of innovation policy governance structures, policy programs and instruments. It identifies key policy priority areas that are of interest in strategic policy formulation. Section 5 concludes and brigs some important policy challenges to the fore.

2. Literature review: the rationale for innovation policy

Under the old regime, all firms could be involved in foreign trade and they would do so to test the competitiveness of their products and rip of the benefits of export-based internationalisation. In general, firms from more technology intensive branches were continuously involved in innovation activities and had relied on extensive and systemic research collaboration with Public Research Organisations (PROs) i.e. especially with Universities and Industry specific research institutes. However, within the framework of lacking competitive pressures State Owned Enterprises have been rather moderately engaged in specialisation or product innovation compared to their western counterparts at the time.

The opening up of markets and the excessive exposure of domestic firms to foreign competition has provided new incentives and new opportunities for firms in all industries. However, in face of the previously mentioned severe and unfavourable changes in framework conditions following dissolution and conflict, resulted in destroyed productive and innovative capacities of local firms. This industry context posed a serious concern in terms of their potential for revitalisation, especially in face of increasing competition following passive liberalisation of markets and trade in the aftermath of war and demanded systemic policy programs and instruments to enhance the catching-up process. Instead transition policies reflected a 'hand-offs' approach to building competitiveness through corporate restructuring and revitalisation programs. The lack of financial and knowledge resources on the government side could partly explain these policy failures. In view of this, it comes as no surprise that previous research has identified severe market and co-ordination failures that inhibit technology growth and innovation potential of the existing firms and industries, particularly pronounced in the manufacturing sector (Silajdzic, 2006:2011b).

Innovative capabilities at the firm and institutional level evolve through complex interaction between them reflecting a systematic learning pattern and gradual accumulation of knowledge (Lall, 2001:2004). Needless to say, that the overwhelming market failures associated with investments in research and innovation including finances, coordination failures, risks and indivisibilities, learning to learn innovation policy, call for an integrated approach and policy governance (Pavitt, 1988; Nelson, 1993). Accumulating technological and innovative capabilities is determined by a multifaceted, interrelated and interdependent interplay between various actors i.e. business and industry, research institutions, academia, the processes in which government funding and policy support plays a key and decisive role (Dosi et al.,1989). This is key policy challenge transition economies face, in an attempt to embark on the course of technological catching up and industrial restructuring.

Even, the development of adaptive/imitative capabilities is necessary for mastering existing technologies and closing of the technological gap. These, however, require systematic gov't support with targeted R&D investments, general funding of R&D activities and the creation of preconditions to support innovations in business enterprise sector. Investments in new technology and innovation are characterized by risks, indivisibilities and 'learning to learn', and are associated with considerable market failures (Pavit, 1984; Dosi and Pavitt,1988). The innovation success is often dependant/conditioned on the complex interface of different actors (e.g. co-ordination failures), that require incentive structures in place to institutionalize innovation and research collaboration. Firms lack internal funds to finance R&D activities, let alone transition economy enterprises.

Past research clearly indicate the complexities and barriers associated with the accumulation of knowledge and patterns of learning. The complexities relating to technology adoption and growth hinder viable restructuring and growth of more technology-intensive sectors, and/or qualitative upgrading within existing industries. The latter proposition has been tested empirically and the results of econometric analysis clearly show that external barriers to innovation i.e. lack of inter-firm/inter-institutional innovation collaboration have significantly adversely affected export performance, particularly pronounced for firms within medium-high technology group. The latter companies that have reported loss of institutional collaboration in face of eroded National System of Innovation, are found to export less by about 40% on average, ceteris paribus (Silajdzic, 2011b). The results reveal not only the essential importance of access to capital and foreign

markets, but also the importance of supply capacity such as access to "knowledge" pertaining to the increase in technological competences.

The findings of this research support the theoretical arguments put forward by Lall (1995), (2001); Pack and Westphal (1986), Chenery (1973). Although, a proper set of market incentives is essential in industrial restructuring and development, technological change may be inhibited by both market and investment coordination failures, but also by the fact that some elements of technology (i.e. are tacit)17 may not be perfectly tradable. Pack and Westphal (1986) further argue that investments in new technologies are often associated with indivisibilities (such as i.e. returns on investment) implying high risks and investment-averse behaviour of private agents.

Limited supply-side capacity i.e. technical expertise within business enterprises, limited cooperation and innovation collaboration, if accompanied with absent systematic government support to technology growth and innovation hinders the potential for more productivity growth and innovation. In the light of the foregoing discussion it is important to emphasize that integrated approach to technological upgrading and innovation is necessary as development of imitative capabilities by firms and technology absorption requires integrated support for specific thematic areas and or industry specific needs. Even development of imitative capabilities related to the adoption of the old technologies demands investments in innovation. This is because technology transfer is not a process of sole imitation. On the contrary it is the cumulative and path dependant process of acquiring knowledge and capabilities as a necessary precondition for mastering and adopting technology (Pavitt, 1988) As such it requires investments in absorptive capabilities, through continuous investments in R&D, or engagement in diverse forms of R&D activities, research and knowledge cooperation. Given the overwhelming market failures associated with funding sources for innovation and technology activities (WB,2010), explain the need to effectively target the process of technological change and growth. Accumulation and upgrading of imitative capabilities requires systematic support that is often content, industry and context specific (Pavitt and Dosi, 1984).

3. Context of investigation:

3.1 The evolution of Science and Innovation policy in BiH
During socialist period, S&T and technological progress in Bosnia and Herzegovina was considered as an essential 'productive force' underpinning successful transformation of the economy and industrial progress. Investments in R&D amounted to 1% of GDP in 1990; thus GERD amounted to 1.45% of GDP in the 1985-1989 period (EI (1991) cited from Silajdzic,2012a), compared to en estimated less than 0.3 percent in recent years. At that period, not only was state spending on research higher than today, but also strong industrial institutes existed in the aeronautics, energy, metalworking, machine tool, automotive, steel, defence, electronics and agri-food industries. R&D system consisted of 66 R&D institutes and 22 Scientific Research laboratories (extra mural, independent research institutes) closely linked to industries (Silajdzic, 2009:2011). R&D investments presented a main source of industrial innovation.

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[17] Tacit refers to both uncertainty regarding the range of available techniques of production, as well as non-transferable knowledge embodied in organisational capabilities of firms, institutional and local technological practices.

In 1995, the Dayton Peace Agreement established BiH as a sovereign state, with complex and decentralized administrative structure dividing the country into two entities, as main administrative units, The Federation of BiH entity further divided into ten cantonal government units, and Repulic of Srpska entity, along with very limited competences at the state level. In the after math of the Dayton Peace Accord, the BiH economy was faced with massive physical devastation of its productive capacity, devastated human & physical capital, broken and lost market linkages, broken collaborative- supply-chain linkages, dis-economies of scale as lay in market fragmentation, and overall bleak industry revitalisation opportunities. Policies of industrial and corporate restructuring relied on privatisation of state(socially) owned capital, as a supreme solution to boost market efficiency and promote private sector growth. None the less, privatisation in BiH has been generally characterised by low investment interest, limited economic impact and massive policy failures. In the course of transition, technology related issues have been largely neglected, mirrored in a 'hands-off' approach to industrial restructuring and re-industrialisation. The 'lesser fare' doctrine wrongly perceived as systematic withdrawal of state from all economic activities including support to innovation. In line with this ideology, restructuring and/ or revitalisation of National System of Innovation (NSI) or R&D Systems was not considered important. Precisely, S&T and innovation generally perceived as a liability and unnecessary burden.

This has been accompanied with missing industrial policy in the early years of transition reforms, as well as deficient industrial policy in recent times. As a consequences, BiH economy soon became to be characterised by massive 'Erosion of NSI' and persistent de-industrialisation throughout the transition period driven by deprived technological upgrading opportunities of its industries, with modest signs of industry revitalisation (Silajdzic & Hashi, 2011; Kaminski and Ng, 2010). The eroded NSI were prominent in closure of research organisations and prominent research institutes, 'disappearance' of industrial R&D function and innovation activity, lost partnership and innovation linkages (pre-war), low demand for innovation and limited revival of research cooperation (Silajdzic & Mehic, 2014; OECD 2013). Past empirical research has identified severe consequences of eroded NSI, including estimated severe negative impact on enterprises' competitiveness (Silajdzic 2011:2014), bleak prospect for technological upgrading and 'catching up' (Halilbasic, 2012; Silajdzic, 2012b). All in all BiH economy is characterized by a 'wedge' that is technological and structural in its very nature, explaining diverging trade patterns and poor technological performance of industries, with specialisation in traditional low-tech industries, and restructuring away from industries with higher value-added. In view of these, strong policy measures are needed to reverse these trends.

Following the dissolution of Yugoslavia and conflict related adverse developments, the structural reforms and the overall approach to transition of BiH economy left the country with the lost relatively good position in terms of science and research infrastructure, with the significant gap between industry and science presenting a major challenge in rebuilding the science and research system.

Innovation policy is relatively a new phenomena in BiH. First innovation programmes have been adopted only in 2007, most of which are ongoing. The new institutional and policy structure is only emerging. As a matter of fact, BiH is in the process of establishing a new NSI-research and science system(s) and science and innovation policy. It has recently developed its basic legal framework to support science and research. A big step forward in terms of basic legal provisions

at the state level present the adoption of the Framework Law on Higher Education (2007), Framework law on Scientific Research Activities and the Coordination of Internal and International Scientific Co-operation in BiH Science (2009), and the Law on intellectual property rights (2009).
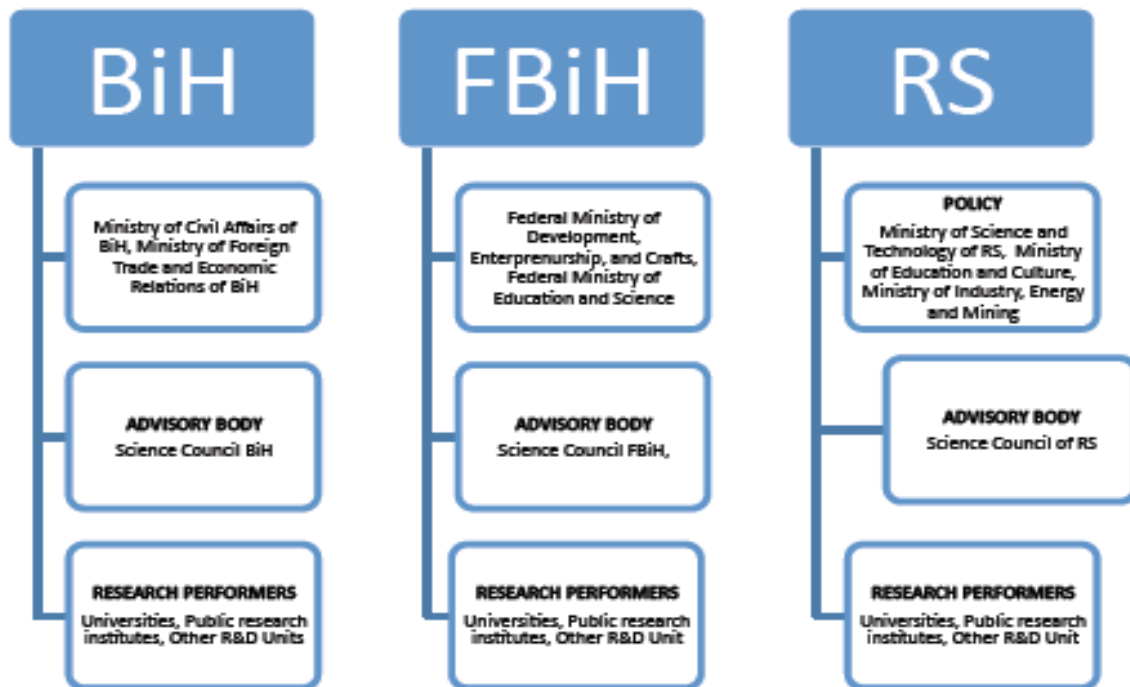
The adoption of Strategy for the Development of Science in BiH – 2016-2022, has clearly identified the roles and responsibilities of key innovation actors at the state, entity and canton levels. The S&T policy is entirely under the competences of entity level governments, following the decentralized state constituency. The state level competences reflect policy coordination and support to international cooperation. Support to innovation and research activities is managed through narrow financial support activities and administered by Ministry of Civil Affairs (MoCA) at the state level.

3.2 Policy structure and governance

The governance of innovation policy in BiH is designed in accordance with the highly decentralised state structure and its complex constituency. As noted earlier, three ministries are effectively responsible for S&T policy design and its implementation: MoCA at the state level, Ministry of Science and Technology in RS, and the Federal Ministry of education and science in FBiH.

Innovation policy is drafted, funded and administered by the relevant ministries. In principle policy makers act as funding organisations, and these two function are not separated following the best practices. This is truly problematic considering the limited competences and capabilities of the ministries to adequately address and evaluate innovation and research proposals, and especially considering the needed flexibility related to the updating and modifying research projects. Although government officials lack specific technical expertise and knowledge needed to implement and provide technical assistance to project proposals under implementation, they engage technical expertise to facilitate the project support effectively. Still more targeted interventions by experts may be welcome in the course of implementation of research project. While, the problem of lack of competences is bypassed by special commission, and/ or steering committees for evaluation and monitoring that is comprised of government officials and S&T experts in the field, the problem of mitigating the risks associated with research project outcomes along the different phases of project implementation remain an open issue. Engagement of technical expertise and technical assistance to assist and evaluate project proposals and its implementation remains a necessary precondition for successful selection and implementation of innovation support programs even of running small scale funding schemes. This is much less issue in RS as opposed to federation entity and state level. However, generally the share of private sector in funding programmes is extremely low across all levels of government.

The policy design and formulation is supported by the recently established Science Councils (See chart below). Science council advice on the preparation of policy support and the annual programs for scientific research; makes propositions and takes initiatives on strengthening the innovation system at the state level, comment on the innovation programs, undertake external and internal evaluations of research activities. Limited expertise on diverse and complex issues related to industrial innovation.

BiH

Ministry of Civil Affairs of BiH, Ministry of Foreign Trade and Economic Relations of BiH

ADVISORY BODY
Science Council BiH

RESEARCH PERFORMERS
Universities, Public research institutes, Other R&D Units

FBiH

Federal Ministry of Development, Enterprenurship, and Crafts, Federal Ministry of Education and Science

ADVISORY BODY
Science Council FBiH,

RESEARCH PERFORMERS
Universities, Public research institutes, Other R&D Unit

RS

POLICY
Ministry of Science and Technology of RS, Ministry of Education and Culture, Ministry of Industry, Energy and Mining

ADVISORY BODY
Science Council of RS

RESEARCH PERFORMERS
Universities, Public research institutes, Other R&D Unit

Source: (OECD, 2011)

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Strengthening the capacity Science councils has been stressed as an important priority by most government representatives. However, science councils may be weak instruments to advise on/develop coherent and strategic measures for innovation and technology targeted investments in BiH, given their heterogeneous scientific profile and diverse/dispersed interests among academic workers in different fields. It is not surprising, then that currently Science Councils have not played any significant role in developing systematic research and innovation support programs.

3.3 Policy formulation and policy scope

The strategy for S&T in Republic of Srpska has been developed for the first time only in 2012 and revised version has been adopted recently (2013-2017). The strategy focuses on both promotion of scientific research and applied research as well as on innovation in a more general sense. Unlike other strategic documents, this document identifies the sectors of strategic importance to RS, and clearly sets thematic research priorities (i.e. agriculture & food, new materials, ICT, medicine and health, energy and energy efficiency, environment & ecology). This is the only policy designed specifically to target individual sectors, although the funding schemes do in principle cover a broad range of priority areas, or assure some flexibility in funding research activities.

The situation in FBiH is rather bleak. The S&T strategy for FBiH was prepared back in 2011 but was never officially adopted due to lack of political commitment to support research and innovation on a larger scale as envisaged by the document. The new S&T strategy is under preparation for FBiH (2016-2026). Given this, the current funding support and innovation policy measures are not in line with any strategic document and research priority areas remain

unidentified in FBiH. Innovation policy programmes are targeted to support scientific research and skills development principally with respect to public higher education institutions.

3.3 Innovation policy funding in BiH

As of 2014 Agency for Statistics of BiH reports on science, technology and innovation activities, according to the international standards set out by the OECD i.e. Frascati manual. According to the first statistical release GERD in BiH amount to 70.4 million KM (35 mill EUR) which is equivalent to 0.38% of GDP. This figure seems significantly higher compared to the earlier estimates of GERD.18 Gross expenditures on research and development (GERD) in BiH have been estimated at 0.1 percent (OECD, 2013). Estimates are usually quoted between 0.1 -0.14% (Europe, 2011). This level of spending is significantly lower compared to pre-war level and significantly below the EU-27 or even SEE averages (1.85 and 0.46 %, respectively). GERD are inconsistent with the country's national income, and represent only 0.04 % of GDP per capita.

The new official statistics also provides data on the actual government expenditures on R&D in BiH for the year 2014 (hence, the latest year available). According to these official data the level of expenditures is much below the earlier estimates, with total actual government expenditures amounting to only 13.8 million KM (less than 7 million EUR), that is about 0.07% of GDP. Hence, the share of government expenditures going to business sector is less than 2%, equivalent to 118 000 KM (59 000 EUR) (Agency for Statistics of BiH, 2015). Moreover, R&D spending in BiH is heavily concentrated toward basic (over 84%) as opposed to applied research (ASBiH, 2015; OECD STI, 2011).

3.4 Policy coherence and integration issues

An integrative strategy to support innovation and technological upgrading is not existent in the country either at the entity, let alone the sate level. The notable exception to this, present recent efforts by RS government officials to coordinate SME, Higher education and S&T strategies. Strategies are being drafted independently and with no reference to the importance of policy coherence between, for instance, the Industrial strategy, Strategies for SME development, Education policy on one hand and the Strategies for S&T.

Coherence between these strategies and applied policy measures are crucial for promoting SME development, enhancing innovative capabilities by business sector, and accelerating commercialisation of innovative efforts, particularly if considering the limited financial resources available to spur SME growth and technological progress. Noteworthy is the fact that no policy coherence efforts have been put in place to provide background information on how innovation policy could serve the interests of wider socio-economic policy goals. Specifically worrying is the fact that in Industrial strategy documents at the entity levels including the currently drafted and partly adopted sectoral specific policies, and SME policies. More specifically, there is no mention of how S&T policy could trigger innovation and contribute to increased companies' performance. Nevertheless, the common interest of increasing competitiveness and export capacity of the real sector, and in particular the selected sectors envisaged by these strategic documents could provide important starting point for identifying key priority areas for innovation

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policy, and designing innovation policy measures that are strictly related to enhancing innovative capability of wider innovation performers irrespective of other policy measures.

4. Overview of innovation policy in Bosnia and Herzegovina

4.1 Methodological remarks

The main findings presented in this paper are based on the qualitative research on innovation policy mix in Bosnia and Herzegovina. This research draws extensively on data and information gathered and prepared within the framework of the EC funded Paccino project. The aim of the qualitative research was to evaluate innovation policy in BiH, while also attempting to identify key policy challenges, policy perspectives and best practice(s), (if any) and assess the potential for their improvement and strategic orientation. The interviews were structured to assess key policy aspects including (i) legal and institutional setting, (ii) policy formulation and governance, (iii) policy evaluation and monitoring, (iv) policy perspectives and challenges, (v) R&D infrastructure capacity. The 5 sections cover a wide range of questions and issues that were addressed and discussed in detail. The principal questions include questions relating to the critical assessment of the existing legal framework (e.g. laws, coverage and compliances); assessment of policy formulation processes and responsible institutions (e.g. validation and assessment of key strategic documents; identification of key institutions and innovation actors); assessment of institutional capacity and governance structure (e.g. organisational, knowledge & funding capabilities of responsible government bodies; the role of research, academic, and intermediary institutions); assessment of policy programmes and specific policy instruments as well as policy program impact analysis. Specific reference was given to identification of policy priorities and key barriers to reach boarder impact on the existing research system.

The qualitative analysis employs in-depth interviews with key policy stake-holders i.e. government officials responsible for S&T policy in Bosnia and Herzegovina (BiH), as well as key policy stake-holders representatives from wider business and selected science & research organisations. All of the expert interviewers were initially identified on the basis of internet search that is based on the review of government representatives responsible for S&T policy formulation. Other stakeholders' interviewers' were selected for interviews based on author's previous experience and recommendation from the network of researchers and/or international experts who conducted previous/ongoing research on innovation policy and S&T policy in BiH.

4.2 Framework conditions for effective Innovation policy

- The role of inter-mediary actors

The role of intermediary actors in strategic support to innovation and technology is missing. The current governance and research system structure is weak as it effectively has no intermediary actors responsible and performing targeted and large scale innovation and technology investments. Recent efforts to establish science and technology parks, and promote clustuer initiatives at all levels of government present a good step forward (e.g. Innovation Centres Banja Luka, Technology parks in number of micro-regions across the country). However, the institutional setup is weak and not functioning properly, due to lack of sufficient and systematic funding, lack of competences and expertise etc. Several measures in support for SMEs, science and/ or technology parks, incubators and innovative clusters have been put in place at different

levels in recent years, like small grants but these measures remain ineffective in establishing the proper structures and work of these institutions, and prompting systematic linkages with universities, business and industry. General roles/activities of these institutions include; support to start-up firms; Promotes cooperation between business and universities; integration of different socio-economic and political actors, technical capacity building and consultancy. Most of these institutions are only emerging, and generally face financial resource, human capability and technical capacity constraints and organizational challenges.

The National Development and S&T Strategy proposed the establishment of a technology parks across different branches and across the entire country. For instance the technology park in Sarajevo with a focus on information technologies, electronics, mechatronics and bio-medicine; technology park in Tuzla with a focus on chemicals, IT and energy; technology park in Mostar focusing on processing of coloured metals, agri-business, energy efficiency/renewable energy; technology park in Banja Luka with a focus on electronics; and technology park in Zenica dedicated to new materials, metal and wood processing. These strategy measures have not yet been translated into effective policy actions.

The impact of all these efforts is rather weak. The real challenge in BiH is the technological upgrading of existing industries and across number of sectors with viable economic potential. Whether cluster initiatives and technology parks of the kind proposed can be sustainable remains an open question. The sustainability of most of the incubators and technology parks strongly depends on the character of support these institutions may get from the government, but also on human capability issues and host of pre-conditions necessary for their effective work. Having said this, although incentive to establish technology parks might seem welcome, it may only drug already limited financial resources with limited impact on business sector. In the light of this discussion, one needs to bear in mind that technology parks do not evolve exogenously and overnight, it takes significant time and effort on the public policy side. Hence, knowledge capabilities evolve through time and are the buy-product concentrated efforts to first build and extract scientist and researchers, and than integrate education and science with industry needs.

The idea that technology parks may be built from the scratch to serve the technology and innovation interests of business community or rather specific industries in the particular context of this country is at least ambiguous. This country faces overwhelmingly scarce knowledge capacity, and further disintegration of these capacities may not be feasible. Perhaps concentrating efforts on building capabilities of surviving and existing nucleuses of accumulated knowledge that rest with universities and science and research organisations, and finding mechanisms to spur their cooperation with industries may seem more effective from both policy perspective and resources view. In the next section we provide a more detailed assessment of R&D and academic organisations.

- The role of R&D and academic organisations

Most of public research infrastructure is inherited from the past (i.e. old system) and persist to be mainly located within public universities. However, the institutions have been through a severe 'erosion' of research capabilities in the course of transition reforms, principally due to the lack of funding opportunities and human capital erosion. Eventually, nowadays many research-oriented institutions seek to exist, formally or functionally. The 'surviving' institutes operate in a 'vacuum' , with limited material and technical capacities necessary to undertake research activities, and

with no systematic links with gov't and industries. None of these institutions has access to permanent funds in the form of general purpose funding, and experts rarely engaged in research either basic or applied, but rather operate on the basis of short term consultancy projects/services.

Public universities & Research laboratories/institutes include:
- research organisations within public universities (i.e. 8 public universities include 2 in RS and 6 in FBiH and related scientific research institutes include 11 in RS and 20 in FBiH)
- other scientific research organisations include 4 within private universities in RS and 10 research institutes in FBiH registered as private legal entities)

Research organisations and institutions across BiH face a number of difficulties in performing their tasks and in particular limited funding opportunities that exist to undertake scientific and applied research, as well as research with a commercialization potential to boost collaboration between research&science organizations and industry and business. Lack of human resource capabilities and technical equipment is another major obstacle in their work. Currently, science-business linkages could hardly be recorded with the notable exception of Agriculture-related S&R organization, that have intensified efforts in helping businesses and agricultural industry grow.

A systematic support to these or selected number or institutions should enable first accumulation of knowledge base and capabilities necessary to undertake research efforts, and second establishment and deepening of collaboration with industry and business sector
is a necessary pre-condition in the process of integration National System of Innovation. Having said this, it would require certain efforts on the government side to identify and select institutions that ought to be subject of systematic government support following for instance the public S&R organization taxonomy (OECD 2011) and importantly matching the enhancement of their capabilities with objectives of other inter-related strategic documents e.g. SME strategy, industrial policy, Education policy. For instance, deeper analysis and technical assistance may be required in an attempt to identify the so called Research-technology organizations/Industrial research institutes that should be responsible for the task of development and transfer of science and technology to industry and business sector.

The development of proper R&D infrastructure should be built on the assessment of existing capacities and the potential for their revitalization, development and collaboration with business sector, rather than on further fragmentation and establishment of new infrastructure i.e. the example of recent technology parks in Mostar, Tuzla, Banja Luka, given the limited human and financial resources available.

- The role of business enterprises

Business R&D expenditures in BiH are exceptionally low by any standard of comparison, and are recorded to be EUR 6.8 millions, which is equivalent to about 0.07% of GDP (source of data Agency of Statistics, 2014). Innovation activities are financed almost exclusively by internal sources of funding i.e. 88% of expenditures. Industrial R&D expenditures barely exist. (Silajdzic, 2011; OECD, 2013). There are no exact figures estimating recent Industrial R&D activities (data), although we can consider the R&D expenditures by engineering and technology sector as a good proxy indicating poor presence of industrial R&D activity in BiH. Total R&D

expenditures by this sector amount to only 4.5 million EUR which is hardly worth mentioning (ASBiH, 2015).

According to official statistics number of employees engaged in R&D by private sector amounts to only 373 persons altogether. Although there is limited R&D function, firms in BiH do engage in innovative activities (Silajdzic, 2011:2014; OECD, 2013). However, it is worthwhile noticing that innovative efforts mostly relate to the absorption of existing and rather 'readily' available/adaptive technologies (Silajdzic, 2011). Recent innovation efforts rarely incorporate new technical/technological solutions that are 'content' and 'context' specific (Silajdzic, 2011:2014).

4.3 Innovation policy mix: review of programs and instruments

Overall, innovation policy in BiH is mainly generic in character, focusing mainly on scientific research, with the notable exception of RS that envisages support to specific thematic areas and support to applied research and technology commercialization activities. Notwithstanding this, given the limited financial resources and low awareness among policy makers innovation in broader sense is not recognized in policy documents. Overall, innovation policy at different levels of government reflects a rather narrow perception of innovation with absent systemic support to enhancing innovative capabilities of network of innovation actors. Thus innovation programs and funding schemes at the state and FBiH level place no reference to innovation policy impact on industries, business competitiveness and overall socio-economic benefits. Further, across all levels of government innovation funding schemes are designed to support a one year, that is a short term and small scale projects with the limited impact on research and innovation system. This is mostly due to limited funding capabilities of these institutions. However, notable differences exist in terms of efficient policy design between the two entities. It is worthwhile noticing that FBiH policy is designed to follow horizontal approach i.e. all sectors and thematic fields are treated equally, and designed mainly to support scientific research and researchers skills development at public HEIs, the innovation policy mix in RS covers much broader range of activities including innovation, research commercialization and technological upgrading. Hence, unlike FBiH or state level, funding schemes are based on clear and careful selection of criteria including the evaluation of socio-economic impact and innovation collaboration.

Overall, financing of research and innovation activities is based on short timeframe (i.e. up to one year) research grants as the form of funding. The fact is that, R&D grants present the only instrument available to support research and innovation activity. Generally, policy initiatives incorporate a wide range of programs which are horizontal in character and include support to innovation culture as well as support to scientific and applied research and innovation in a more general sense. Generally, innovation programs include competitive grants for innovators, competitive grants for funding basic and applied research, acquisition of basic research equipment etc.19 Yet, small size of grants available inhibits significant impact on research capacity of individual research organisations, and essentially discourage applications for funding research activities and innovation with wider commercialisation potential and use. Innovations or applications of new technology that serves wider social interest, typically bear cost burden and

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[19] Due to space limitation here we do not present a detailed description of policy programs and instruments. They are available upon request.

are accompanied with indivisibilities and 'learning to learn' cycles that require longer term funding, technical assistance and systematic support. SMEs are generally not eligible for funding, which is particularly problematic considering pervasive market failures that SMEs face when investing in new technology and innovation. However, RS encourages SMEs to participate in innovation thorough cooperation with research institutes or academic organization.

Innovation support programmes include financial grants and matching grants for financing 'scientific and research activities' and some 'narrow-based' innovation activities in the context of RS policy (e.g. prototype development and testing, patenting activities). Overall, policy programs are mainly generic in character, with the following major policy weakness:

- Innovation support programmes are not designed for specific thematic areas (FBiH), although in RS they are defined with reference to research priority areas and the socio- economic impact (RS).
- The main policy measures including financial instruments for financing are not targeted for either fields of science and/or type of research. The RS, however, defines preferred thematic research and these include agriculture & food, new materials, environment & ecology, energy and energy efficiency.
- The policy programmes do not target SMEs and they are not directly eligible for funding.
- Policy initiatives are not designed to overcome market failures including widespread access to capital problem, problems firms face that relate to 'tacit' and indivisible aspects of technology acquisition and adoption, problems relating to investment coordination, technological complementarities and interdependencies among and within specific industries with the 'defy' comparative advantage
- There is a lack of systematic and effective evaluation of the research supporting programmes – ex-post evaluation with poorly/generically defined evaluation criteria
- Poor implementation capability and technical assistance facility, all policy programmes are administered by the relevant State/entity ministry
- Poor evidence on the effectiveness of innovation policy and its socio-economic impact. Poor financing is considered a major weakness.
- Finally, as noted earlier innovation is severely underfunded. Maximum grants available per program is EUR 25 000. On average, however, the size of the grants ranges between EUR 5 000 – 7 000 due to large number of eligible applications received and poorly targeted initiatives. With this level of funding, no impact on larger scale can be expected.

Innovation funding is principally allocated via competition-based calls and administered by the Ministry of Civil Affairs- at the State level , the Ministry of Science and Technology of RS , the Ministry of Education and Science of FBiH. Policy instruments basically include grants and matching grants. Most common policy initiatives include:

- Competitive grants for conducting basic research, applied research and experimental development
- Competitive grants for supporting young and gifted scholars in their science and research activity
- Competitive grants for publishing scientific and research publications and journals

- Competitive grants for participation in international scientific conferences and development of scientific cooperation; Competitive grants for acquisition of research equipment
- Direct grants for support of scientific and professional associations
- Competitive grants for the organisation of scientific events
- Competitive grants for innovators
- Projects for development of new technologies
- Project for development of ICT

The total funding allocated to support science and research activities in BiH is rather limited which present the major constrain to affect business innovation activity and competitiveness on a larger scale. In RS total innovation-related funding amounts to about 443 000 EUR (actual expenditures), with limited funding available per research project (max EUR 20 000 – 25 000). The interviewers agree that current dispersion of funds inhibits more effective use of applied measures. In view of this, the staff has engaged in concentrated efforts to support large scale research project. Although SMEs cannot directly apply for these funds, they are highly encouraged to collaborate with academia and research institutions. The fact that SMEs have limited knowledge and research capacity OECD, et al. (2012), (also frequently noted by interviewees) is an argument worth considering when thinking about policy effectiveness.

The largest share of public funding that goes to support research activities in BiH , is allocated by Federal Ministry for Education and Science, yet, with no reference to any policy document (some 1.3 million EUR). Thus, more than 4/5 of this amount is distributed directly to public universities and public research organization in the form of an ongoing support to R&D activities. Specifically, these funds are administered by public Universities (HEI) through internal competition calls, without considering the wider use and impact of funding research activities. Given the linear pattern of funds distribution, individual faculties receive about 9 000 EUR for financing their research and other research activities per annum. The individual university budget is too small to have an impact on national research system. Although, general purpose funding of research organisations and HEIs is needed, or is ultimate priority, some criteria that would call for university-industry collaboration would be preferable, especially considering limited/eroded research capability of HEIs and limited financial resources available. A simple selection of research priority areas and preference given to applied research or research with commercialization potential would be beneficial.

It is important to note, that there are no demand side policy measures applied in BiH in terms of providing tax incentives for investors in R&D activities or through stimulating innovation by procurement policy measures. At the top of it, the acquisition/import of technology or research equipment is not exempt from custom or VAT duties unless it is financed by international donor community. The latter exemption poses the only existing incentive to research and innovation in the country.

Although government officials responsible for innovation policy are generally aware of lack of systematic support to innovation being a major weakness (i.e. officials form the responsible ministry in RS), they point that limited financial resources on the government side, and missing proper institutional and governance structures on the other inhibit effective policy design. This is

primarily why innovation policy and envisaged support measures are mostly designed to target individual actors and their specific, short time-frame research and innovation activity, with no systemic support to research collaboration.

All in all, with this level of funding, and eroded science base one can hardly expect re-establishment of national-system of innovation. The lack of systematic support to building of a science base and linking science with industry through decent funding opportunities present major barrier to creating and integrating innovation system(s) in BiH and boosting competitiveness and growth. Considering limited financial capacity for funding innovation, the current innovation policy and its running funding schemes attempt to follow narrow-targeted activities defined in the S&T strategies (or even not defied as is the case of FBiH), with no visible division between ministries competence lines . Consequently, recent R&D funding is not linked to industry and current R&D policy mostly reflects modest state funding of scientific and applied research with no or limited commercialisation potential. While the notable exception is evident in RS that does provide some funding that prioritises 'the potential commercial use of innovation' or that it serves business interest, R&D funding in FBiH is predominantly based on funding scientific research by public Universities. No funding of industrial R&D activities is effectively present.

5. Concluding remarks, policy perspectives and challenges

The aim of this paper was to explore the evolution and the character of innovation policy in BiH in an integrated framework. Specifically, this paper aims to assess the Innovation policy mix in Bosnia and Herzegovina, with focus the (potential) role played by integrated innovation policy in building National System of Innovation, stimulating competitiveness and technology growth. It provides, in-depth assessment of the existing legal and institutional framework, governance structure and innovation policy mix, and identifies key policy priority areas, that are of interest in strategic policy formulation.

Based on the qualitative analysis, we seek to investigate the extent to which specific policy measures and instruments provide support for industrial upgrading and growth. Overall we conclude that current policy measures are ineffective and do not provide sufficient support for industry revitalisation. The level of funding is too small, with short timeframe, thus accompanied with excessive number policy instruments available that prevent more effective use of innovation support measures. Moreover, policy initiatives do not target specific industries, sectors and/or firms, and are not content or technology specific which prevent enhancement of competitiveness of strategic firms and industries. Last but not least, policy initiative target strictly innovation, with limited support for innovation collaboration (only envisaged in RS) and absent direct support to innovation by firms (e.g. Small and Medium Enterprises). At this level of technological development, policy initiatives should principally focus on direct measures such as subsidies and concessional loans that target technology acquisitions and knowledge transfer. Overall, the potential to boost the country's competitiveness and growth is certainly dependant on country's ability to scale-up funding of direct policy instruments that might have greater impact on industry and sector level technological and innovative capabilities.

We also explore how effective these policy measures have been in reintegrating National System of Innovation. The IP and innovation related governance structure is not appropriate. Moreover,

the current institutional setting is inadequate for both effective policy formulation and implementation. This problem is especially pronounced in FBiH given its complex administrative structure. More specifically, the institutional setting in place reveals critical weaknesses: i) the underdeveloped institutional framework (e.g. there are no independent-sustainable technology and R&D related institutions in place, eroded human capabilities and limited technical capacity of existing institutions, poor or no links with industrial enterprises –general purpose R&D funding is a prerequisite); ii) the limited capacities of existing governance structures, especially those related to skills and knowledge needed for effective IP formulation, implementation and monitoring. National priorities in R&D need be clearly defined, including: (i) policy on structural and institutional transformation of R&D systems; (ii) prerequisites for development of cooperation on R&D between higher education and the business sector defined; (iii) Developed capacity to promote international cooperation and integration into European Research Area.

Putting incentive structures and policy measures in place for the purposes of not only strengthening the science base, but also in promoting collaboration present a key policy challenge. In years to come BiH faces a demanding challenge of (re)building National System of Innovation that serves the wider interests of industrial restructuring, revitalisation and competitiveness building.

In light of this discussion the key strategic goals of S&T strategies(s) should embrace; 1. strengthening of the science-base; 2. accelerating commercialization of research and innovative efforts; 3. promote business growth and technological upgrading through industry related research, technology acquisition and knowledge transfer; 4. accelerate new business growth and facilitate innovative start-up companies. The achievement of these goals is directly dependant on the innovation policy design, and governance of the national innovation systems. Overall, the effective innovation policy requires not only a significant funding capabilities (which BiH lacks) but necessitates a systematic approach to a: first, understanding growth in terms of knowledge on the determinants of economic growth from both macroeconomic, and industry and firm level perspectives, as inputs to industrial and science and innovation policy; second, identifying barriers to technological upgrading and innovation in a specific country& industry content, as inputs to industrial and science and innovation policy; third, a need to identify major challenges facing policy formulation that would be growth enhancing in a specific country (BiH) and industry context, including policy instruments to effectively promote industrial restructuring and dynamics, technological change and growth, regional integration and industrial cooperation International competition.

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DO ENVIRONMENTAL TAXES PAY OFF? THE IMPACT OF ENERGY AND TRANSPORT TAX ON CO2 EMISSIONS IN TRANSITION ECONOMIES

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Abstract

In this paper we investigate the impact of environmental taxes on CO2 emissions in the context of emerging market economies. An attempt has been made to identify what role does the environmental policy and its specific tax policy measures play in understanding the relationship between economic development and environmental degradation. The empirical analysis covers ten Central and Eastern European countries in the period from 1995 to 2015. The latest data on environmental taxes are available only from 1995. We contribute to recent literature in two respects. First we study this relationship in an dynamic framework in which we take into account the issues of serial correlation and endogeneity in the regressors due to cointegration relationship. Specifically, we rely on fully-modified least squares (FM-OLS) estimation technique to model the long term relationship between income and carbon-dioxide emissions. Second, this paper advances our understanding on the effectiveness of tax policy measures in curbing CO2 emissions, on which we have scarce empirical evidence. The results of this analysis provide rather strong evidence in support of an inverted U-shaped relationship between economic growth and the environment. However, environmental taxes do not seem to be effective in modifying the behaviour of economic agents and in protecting the environment. The results are robust to different models.

Key words: Environmental Kuznets Curve (EKC) Hypothesis, environmental policy, pollution, CO2 emissions, transition countries

1. Introduction

What is the relationship between economic growth and the environment presents one of the critical questions prominent in today's policy debate. The conventional Environmental Kuznets Curve Hypothesis (EKC) is often used to explain the relationship. The EKC hypothesis implies the existence of the so called inverted-U relationship between economic development and environmental degradation. According to this phenomena observed in number of early EKC studies (Grossman and Kreuger, 1995; De Bruyn et al., 1998) environment is deteriorated in the phases of progressive growth following structural transformation of the economy and industrialisation, up until a certain point (usually referred to as the threshold income level) which is then followed by a

subsequent phase of improvement in environmental quality. The reverse influence is often associated with the so called *technological effect* and the *composition effect* (see for instance Panayotou, 1993), considered the major driving forces explaining the downward slope of the inverted-U shape relationship. The technological effect reveals improvements in environmental quality following introduction of more environmentally friendly technologies, or simply by improvements in production efficiency and productivity in wake of innovation that result in more efficient use of energy or input mix. The composition effect, implies simply that the changes in the structure of the economy are favourable in terms of service sector playing a dominant role driving economic growth.

Yet, more recent empirical evidence fail to comply with the existence of an inverted-U relationship, thus casting serious doubts on the robustness of earlier findings (see for instance Stern, 2004; Ekins, 2000; Harbaugh et al., 2002; Borghesi, 2000) and the suggested merits of the technological and composition effects. In wake of this scepticism, the importance of reconsidering the so called *scale effect*, according to which economic activity is always environmentally damaging as increases in production and consumption imply intensified use of environmental resources, comes to the fore. Likewise, the role played by environmental regulation has gained increased attention among academic scholars and policy makers. In view of intensified efforts to protect the environment, and in particular to curb CO2 emissions globally, the question of how effective environmental policy has been in safeguarding the environment has become prominent in policy discourse.
That is to say that the *policy effect* (see for instance Yandle et al. 2004) has been considered as an important factor that may influence the relationship between economic growth and the environment.

In view of inconsistent empirical evidence on the income-environment relationship, countries have put increasing efforts to regulate the environment and restrict pollution emissions. How effective these policy efforts have been is the principal question investigated by this empirical study. In particular, we explore whether environmental taxes have been associated with decreases in CO2 emissions in the context of transition economies. The literature often points to the adverse effect of environmental taxes on industry's competitiveness, suggesting that the taxes bear significant economic costs (Hendersone, 1996:2000, Greenstone, 2002 Walker, 2012, Silajdzic&Mehic, 2015).[20] The critical question investigated in this paper is the one of policy effect on CO2 emission. Following increases in the overall tax burden imposed on companies operating within the EU market, it is worthwhile considering the effectiveness of these rigorous policy measures. The commonly accepted principle that the prices should incorporate the full cost of environmental damage is used to justify the imposition of higher and diverse environmental tax rates among the EU member states.

This said, comprehending the effectiveness of environmental policy in safeguarding the environment requires deeper understanding of the relationship between economic growth and the environment. In this paper, we look at how income is related to environmental quality while also taking into account the policy effect. An attempt is made to investigate the role played by environmental policy initiatives and its specific tax policy measures in comprehending the income-environment relationship. We analyse the existence of Environmental Kuznetz Curve (EKC) hypothesis in the context of the ten Central and Eastern European countries (CEECs) i.e. Czech Republic, Slovenia, Slovakia, Poland, Hungary, Estonia, Latvia, Lithuania, Romania, Bulgaria.

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[20] Indeed, a number of studies have suggested benefits of cleaner air regulation in line with the so called Porteer hypothesis (see for instance Deschenes et al. (2012); Lleras-Muney (2010).

We find rather strong evidence on the existence of EKC hypothesis. The obtained results are, however, only indicative that continued economic growth does provide for better environmental quality (EKC) since environmental taxes do not seem to be effective in curbing CO2 emissions in transition economies. The results of this study have profound policy implications that should be considered in the context of international environmental policy agenda.

This paper is structured as follows. First, we explore past empirical literature examining the relationship between income and the environment, and highlight the scarce empirical evidence investigating the effectiveness of environmental policy. In section three we explain the model and econometric approach to investigating the EKC hypothesis. We embark from earlier studies in that we employ dynamic econometric framework to account for the potential problems of endogeneity, serial correlation and cross sectional dependence in the data. Discussion of results and policy implications follow. Section 5 concludes.

2. Literature review

The relationship between economic growth and environment is commonly explained using the so called Environmental Kuznets Curve Hypothesis. The EKC hypothesis posit that environment initially worsens as economy grows up to a certain threshold, after which increases in income are associated with significant improvements in environmental quality (Grossman and Kreuger, 1995). Yet, there is no grounded theory on the income-environment relationship, and a number of diverse though complementary theoretical proposition have emerged in explaining the relationship. In sections to follow we briefly explain main theoretical propositions and review the empirical evidence on the matter.

The assumed inverse-U shape of the EKC curve is commonly explained while referring to the key drivers of income-environment relationship, namely the *scale effect*, the *technological effect* and the *composition effect. The scale effect* – implies that increases in production and consumption are always environmentally damaging as they are associated with the intensified use of natural resources. *The technological effect* implies that advances in technology underpin improvements in environmental quality. Innovation often leads to increases in production efficiency and subsequent productivity gains by affecting input mix (e.g less dependence on natural capital), lessening the energy intensities of certain industries, or generally results in more efficient use of environmental resources and less pollution. Panayotou (1993) stresses the importance of the changes in the technology structure of an economy as industrialisation takes place. Finally, *the composition effect* – implies that the changes in the structure of the economy along the development path are associated with less environmental degradation following the expansion of the service sector that becomes the key driving force of growth.

The *composition effect* is closely associated with the structuralist approach to understanding the income environment relationship, or the so called structuralist economic growth model (Lewis, 1963; Chenery, 1974). This 'closed-economy' model is, however, less applicable in a today's increasingly globalised world where de-industrialisation in the context of for instance industrialised countries may occur as a result of shift rather than a reduction in the levels of pollution. Put differently, if this growth model is taken as granted, with limited or no reference to interrelatedness and inter-dependency of countries now a days, it may have implicit and profound implications on

environmental policy (see for instance Everet et al. 2010).[21] In terms of developing countries, imposing stricter environmental regulation may be considered costly and unnecessary burden, while subsequently in the context of more advanced industrialised countries environmental policy can come at odds with broader societal goals linked to the impact of subsequent shift in labour, scale and pollution intensive industries on employment and competitiveness in these countries. At last, the structuralist view may justify the hands-off approach to protecting the environment.

The persistent increases in aggregate consumption, and total energy consumption by industrialised countries in particular, alongside increases in income has become increasingly worrying (Everet et al., 2010). This commonly observed behavioural pattern is assumed to have profound adverse effects on the earth's environment, thus calling for proactive and integrated policy measures to safeguard the environment. On this ground the merits of environmental policy efforts have come to the fore of policy discussion. This is why, integrating policy efforts in understanding the income environment relationship has become increasingly important nowadays. The *policy effect* reflects on incentive structures and policy measures specifically designed to protect the environment. Yet, while the existence of EKC may reduce the relevance of environmental policy, preventing the adverse impact of economic activity on the environment, seems essential. No doubt, the cost of repairing the environmental damage may be too high or simply the environmental damage may be irreversible. In the light of this discussion, Yandle et al. (2004) highlight the role of environmental regulation, that is institutional and policy development as society progresses, to be the major driving force explaining the downward slope of the inverted-U shape relationship. Along these lines of reasoning, a study by De Bruyn (1997) suggests that the inverse relationship between income and environmental degradation is better explained by environmental policy than by economic factors i.e. structural change, giving rise to the importance of environmental policy.

Notwithstanding this, the vital question, however, remains the one on which policy options seem to pay-off? Environmental policy is quite complex set of direct and indirect measures i.e. incentive-structures aimed at protecting the environment. Where possible policy options should induce convergence between to two pillars of sustainable development namely the environment and economic growth,-the principle that has trigged much of controversial policy debate. While environmental taxes are considered the most effective tool in protecting the environment (OECD) countries often remain reluctant on imposing those taxes, given the risks of inducing additional economic costs and jeopardising competitiveness of local industries in wake of heterogeneous environmental regulations between countries.

A number of studies have found that environmental taxes adversely affect industries' competitiveness, and lower investments and employment opportunities. (Hendersone, 1996:2000, Greenstone, 2002 Walker, 2012, Silajdzic&Mehic, 2015).[22] A more recent study by Greenstone et al.(2012) provide robust evidence on the negative impact of the US air quality regulation on total factor productivity of US manufacturing plants. Thus, more stringent environmental regulation is

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[21] Ekins (2000) analyses the GDP growth and growth in emissions of CO2, SO2, and NOX in seven developed countries between 1970 and 1993. his study finds evidence on relative and absolute decoupeling. Increases in GDP have been associated with lower increases in emissions for majority of countries, while decreases in emmissions along GDP increeases have been found in few countries. For instance, the updated analysis using OECD data up to 2005 indicates absolute decoupling in UK, Germany, and France for all indicators.

[22] Indeed, a number of studies have suggested benefits of cleaner air regulation in line with the so called Porteer hypothesis (see for instance Deschenes et al. (2012); Lleras-Muney (2010).

often associated with shifting production overseas i.e. Haven Pollution Hypothesis. This said, the critical question, remains the one of how effective environmental policy measures have been in modifying the behaviour of economic agents, regardless of economic costs.

Previous literature, have mostly failed to study this relationship in an integrated framework (e.g. early studies using reduced-form regressions), and have failed to investigate the impact of environmental policy while referring to more disaggregated policy measures as argued by Stern (2004). [23]Similarly, most studies failed to address the relevance of the scale effect relative to composition and technological effect, since as pointed by Arrow (1996) economic activity may always be environmentally disruptive in some way, and scaling of either consumption or production is highly relevant for understanding the shape of the curve. After all, given the mixed evidence on the matter,[24] the relevant question becomes not the one of the shape of the curve (since we may never be able to obtain robust evidence on income elasticities) but rather on the underlying processes that explain the factors that impact environmental degradation.

This said, it is worth mentioning that fixed effect models estimated in most of past studies bear little information on the existence of EKC in an transition economy context. As shown by Hsiao (1986), fixed effect model results cannot be generalised to other samples of data. Transition countries embarked on similar policy pattern in the processes of far-reaching structural and institutional transformation. On this ground, it is seems reasonable to analyse what role has the environmental policy played in Central and Eastern European transition economies. Specifically, we analyse the impact of environmental taxes i.e. energy and transport taxes on CO_2 emissions while referring to the sample of CEECs transition economies. The obtained results allows us to go into greater detail about these countries, minimising the risks of obtaining biased estimates.

Finally, past empirical studies examining the existence of EKC hypothesis mostly fail to account for the problems of endegenieity due to correlation in the regressors, the problems of serial correlation and cross-sectional dependence in the data, and often ignore the possible cointegration between income and CO_2 emissions. For a detailed discussion on methodological issues related to testing of EKC hypothesis see Wagner (2008). Studies that relay on fixed effect models bear little relevance to understanding the dynamics of the income environment relationship. In this study we employ a dynamic econometric framework. An attempt is made to remedy for the methological deficiencies which may bais the results, as we discuss later on.

3. Context of investigation

The interest of this paper is to examine the relevance of EKC hypothesis and environmental policy measures in the context of CEECs countries. The specificities that relate to economic restructuring

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[23] Previous studies indicating importance of social and human capital as well as political governance and corruption in lowering environmental degradation (Deacon, 2005, Barros et al. ,2002), Dacon and Norman , 2004), Constantini and Martini , 2006) may bear little information for policy makers. The causal links of some of these institutional and policy factors with pollutants or some indicator of environmental degradation may be questionable from theoretical point of view.

[24]The existence an inverted U shaped EKC hypothesis has been indicated in studies by (Wang, 2013; Wagner, 2008; Vollebergh et al., 2009; De Bruyn et al., 1998; Constantini and Martini (2006), Dutt, 2008); an N-shaped EKC suggested by (Akbostanci et al. 2009; Inmaculada and Aurelia, 2004; Galeotti et al, 2006; Grossman and Kreuger, 1991). A number of studies found weak or no evidence to support the EKC hypothesis (Perman and Stern, 2003; Harbaugh et al., 2002; Borghesi, 2000).

and institutional transformation and development along the processes of transition and integration into the EU institutional and policy structures, seems important to be acknowledged for at least three reasons. Although the income disparities between the CEECs and the EU-15 countries still prevail, it is principally the differences in the institutional capabilities, economic structures and the levels of technological development that are of particular importance in the sense that these pose a specific and distinctive context of investigation. More specifically, it seems reasonable to assume that these differences may not only affect government capabilities, its policy orientation and choices, but also the responsiveness of economic agents (both the consumers and the producers) given the differences in the patterns of behavior and overall technological capabilities of firms and industries that are important to be considered in the context of environmental policy effectiveness and promotion. This is to say that although policy commitments to low-carbon age are imposed at the supranational, that is EU-28 level, specific policy measures may vary across countries and generally, given the aforementioned differences the consequences and the effect of these policy measures may be different in the specific context of CEECs countries relative to more advanced EU member states.

For instance average private and public R&D investments among CEECs remain generally below the EU-15 average. Similarly environmental policy taxes seem modest relative to those applied in more advanced EU countries if considering the revenues collected from environmental taxes, with notable exception of Slovenia. The average environmental tax revenues relative to GDP is below the EU average of 2.3% (see Appendix, figure 3) while energy efficiency measured as energy consumption relative to output (, i.e. energy consumption per unit of physical output) remain at much lower level in these countries compared to EU-15 levels (see Appendix, figure 2). The latter indicator is particularly important and indicative of persistent reliance on energy intensive industries such as chemicals, steel and paper in value added of manufacturing industries. Over the period 2005-2009, improvements took place in all industrial branches across CEECs, such as -5.1%/year in Poland, -5.9%/year in Romania, -4.9%/year in Slovenia, -3.2% in Hungary, -2.2%/year in Czech Republic). Energy efficiency improvement in industry results from technical improvement in industrial process and electric motors, encouraged by policies combining tax incentives and voluntary agreements, investment and R&D subsidies. Given the persistent underperformance in terms of energy efficiency of CEECs countries the improvements in energy efficiency as well as shift in production structures of CEECs remains a challenge.

In view of these differences, it seems important address the issue of how environmental policy measures have been effective in modifying the behavior of producers and in curbing CO_2 emissions . In particular, we emphasise that investigating the influence of energy and transport taxes on aggregate carbod dioxide emmissions seem valuable from EU-28 policy perspective. Energy industries and transport sector did no show the gradual dicline in emissions as other sectors. Emissions only started to decrase from about 2007 onwards but still remain higher than in 1990 (European Commission, European Climate Change Programme(s)). Transport accounts for about one-quarter of EU green-gas house emissions. In line with a new European Strategy for low-emission mobility (adopted 2016) transport taxes are seen as an important market-based instrument initiated not only to integrate the 'full' costs of environmental degradation but to effectively modify the behavior of the consumers and producers. Furthermore, in line with energy efficiency objectives, energy taxes (including oil and gasoline) are expected to contribute to the improvements in energy efficiency and provide incentive structures to acquire additional shifts in the production

structure towards more cleaner and sophisticated production. These taxes also generate revenues that can potentially be used to finance environmental policy programmes.

However, in veiw of the above mentioned structural and technological differences between CEECs and EU-15 countries, we do postulate that effectiveness of for instance energy tax imposed is dependent on a firm or industry's ability to either pursue subsequent shifts in structure of value added that would lead to improvements in energy efficiency, while shifts in the production structure would require building systemic technological capabilities across vital industrial branches, to move up the technology ladder.

Environmental tax revenues as share of total revenue from taxes and social contributions remain at about 6.4% at the EU level. Environmental taxes remain at a very low level despite increasing policy efforts and commitments to preserve the environment. Energy taxes account for about 76% of all environmental tax revenues, while transport tax revenues account for about 20%, and pollution and resources for only about 2.5 %. Breakdown of tax revenues by country and type of tax is presented in figure 3 below. In the specific context of CEECs countries, the tax revenues from pollution and resource are barely existent, with the notable exception of Slovenia and Estonia.

The EU has made very strict commitment to cut its energy consumption by 20% (compared with projected levels) by 2020. The policy focus is on providing policy support measures and investing in shift from fossil fuels to energy production from renewable resources. CEECs do not seem to lag behind other EU member countries. Thus, when it comes to CEECs countries, most countries have already reached the 2020 targets for the share of renewable energy as a % share in total energy consumption or are very close to reaching those targets (see Appendix, figure 4). Given the general tendency to lower energy consumption, its significant and economically important impact on aggregate carbon dioxide emissions would reflect on the relevance of existing policy efforts to reduce energy consumption. Worth mentioning, energy consumption has decreased significantly compared to 1990 level, in the EU-28. Though energy consumption has been decreasing in relative terms (see Appendix, figure 1), it has been increasing in absolute terms, since 1993 onwards at an average annual rate of 0.6 present.

4. Empirical analysis

The model

In this empirical analysis, data on CO2 emissions for CEEC-10 are examined in an attempt to provide information on not only whether EKC exists but also on the role played by environmental policy. We examine the impact of environmental taxes by incorporating a more disaggregated data on environmental policy, precisely taking into account the impact of individual energy and transport taxes. We also analyse the impact of technological and scale effects proxied by energy intensity of industry. We include a number of control variables i.e. country specific effects to control for time-invariant country effects, as well as time effects to control for the time-variant specific effects. Finally, as noted earlier, we analyse the relationship while referring to the case of more advanced transition economies of Central and Eastern Europe (CEE-10) in the period 1995-2013. In the period 1992-2013 however the data on environmental taxes are available from 1995. We use unbalanced panel data. In line with above propositions, we estimate the following equation:

$$\log CO2pc_{it} = \beta_0 + \beta_1 \log GDPpc_{it} + \beta_2 \log GDP^2 pc_{it} + \beta_3 \log EnergyIndustrypc_{it} + \beta_4 \log Energytaxpc_{it}$$

$$+ \beta_5 \log TransporttaxpcFDI_{it} + \sum_{i=1}^{10} \beta CountryD_i + \sum_{i=1}^{10} \beta TimeD_i + \varepsilon_{it}$$

where:

the dependant variable, $CO2pc_{it}$ denotes CO_2 emissions per capita of the country i in the period t; *GDPpc and GDPpc^2* denote real GDP per capita of the country i in the period t; *EnergyIndustrypc* denotes energy intensity of industry expressed as per capita energy consumption of industries of country i in the period t[25]; Energy environmental taxes (*EnergyTax$_{it}$*) denotes energy taxes per capita of the country i in the period t; Transport environmental taxes (*TransportTax$_{it}$*) denotes transport taxes per capita of the country i in the period t; FDI_{it} denotes FDI stock[26] in manufacturing sector per capita of the country i in the period t, *CountryD* denotes country dummy variables used to control for time-invariant country specific effects and *TimeD* denotes year dummy variables used to control for time specific effect, ε_{it} – random error (structure e_{it} determined by the Fixed Effect (FE) model).[27] All variables are expressed in logs. Importantly, following Jaforullah and King (2017) we do not incorporate total energy consumption into the CO2 model, considering the demonstrated econometric consequences and the sensitivity of the obtained results with respect to both magnitude and sign of the obtained coefficients when energy consumption is included in the model to be estimated.

Principle variable of interest: the impact of environmental tax policy measures

In this study we assume that taxes may be efficient and linearly related to lowering CO2 emissions. However, we also allow for the neutral or even positive effect of taxes, given that in some or number of instances taxes may not be associated with improved environmental quality, depending on the availability of the input alternatives. It seems reasonable to argue that in instances in which firms and industries reach the technological frontiers taxing energy consumption, resource use or pollution may not be effective since, more energy efficient technologies may not be readily available, or simply it may take significant time before new or alternative input and output structures of environmentally friendly technologies become available. Therefore, we have no a priory expectations with respect to the sign and the significance of the three principal variables of interest i.e. Tax variables. However, we do assume that environmental taxes may pose good incentive structures in countries/industries that are at the lower level of technological sophistication and could relatively easily switch to/adopt more energy efficient as well as cleaner technologies, subsequently reducing CO2 emissions.

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[25] Energy intensity by industry is calculated as the sum of inland consumption of the five sources of energy solid fuels, oil, gas, nuclear and renewable sources by industry including manufacturing industry, construction and mining, expressed as the ratio to GDP . Since the gross inland consumption of industry is measured in kilograms of oil equivalent and GDP in EUR 1000, this ratio is measure in kgoe per EUR 1000. This data is then divided by poplation to obtain industry energy intensity in per capita terms. This data reflect on economic efficieny of an industry.The energy consumption in manufacturing sector represents around 98% of the consumption of industry. (source Eurostat) The share of energy consumption by industry may depict on subsequent changes in the production structure of an economy i.e. shifts from energy-intensive to more environmentally friendly or sophisticated production.

[26] Considering FDI stock rather than inflows is assumed more appropriate in an attempt to capture the long-term technology related spillovers associated with foreign capital inflows (Neuhaus, 2006; Campos and Kinoshita, 2002).

[27] The source of CO2 data, Energy intensity of industry, and environmental taxes data is EUROSTAT. The source of GDP data is World development indicators; it refers to real GDP per capita income. Source of the FDI data is Vienna Institute for International Economic Studies (WIIW) database on FDI.

Most CEECs countries have introduced energy and pollution taxes, in an attempt to limit emissions of air pollutants, in particular of green gas emissions from power generations (see OECD, 2004:2010). They have done so mostly by introducing energy taxes. Energy use account for largest proportion of environmental degradation estimated at about over 80% in OECD countries (OECD, 2004). Energy taxes reflect on important measures to reduce energy demand via economic, that is market based instruments. How effective energy taxes are in lowering energy demand and in curbing CO2 emissions in transition economies, present principal question of interest in this analysis?

Similarly, a number of countries (Slovakia, Czech Republic, Slovenia and Hungary) have introduced sufficient transport taxes, since taxing transport seems important and effective mean of lowering air pollutions. Although transport does contribute to economic growth and is important for overall social well being, further growth in transport may lead to significant degradation in environment given it contributes to the depletion of non-renewable resources. Introducing transport taxes and restructuring transport taxes to better target negative externalities on the environment e.g.. by replacing fuel excises with per-kilometre charges has been practice in number of transition economies. We investigate how effective transport taxes have been in curbing CO2 emissions, via lowering demand for road transport.

An environmental tax is a tax whose base is a physical unit (or a proxy of a physical unit) of something that has a proven, specific negative impact on the environment. Environmental tax statistics present data on taxes in the following areas: energy, transport, pollution and resource. Considering the definition and the methodology of tax application, both energy and transport tax attempt to reduce CO2 emissions emanating from transport, since Energy tax base calculation encompasses taxing fuel from transport, while transport tax principally includes motor vehicles import/sale, registration and use taxes, as well as road taxes and other means of transport. [28] Hence, road transport accounts for about 75% of all GGH emissions from transport.[29]

Descriptive statistics

Table 1, Table 2 present the descriptive statistics of variables and the correlation matrix among variables, respectively.

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[28] Specifically, the list of environmental tax bases for: a) Energy (including fuel for transport) tax includes the following: 1. Energy products for transport purposes; *Unleaded petrol ; Leaded petrol; Diesel ; Other energy products for transport purposes (e.g. LPG, natural gas, kerosene or fuel oil)* 2. Energy products for stationary purposes; *Light fuel oil , Heavy fuel oil, Natural gas, Coal , Coke , Biofuels , Electricity consumption and production, District heat consumption and production, Other energy products for stationary use*, 3. Greenhouse gases; carbon content of fuels , emissions of greenhouse gases (including proceeds from emission permits recorded as taxes in the national accounts) . The list of Transport (excluding fuel for transport) tax base includes: 1. Motor vehicles import or sale (one off taxes); 2. Registration or use of motor vehicles, recurrent (e.g. yearly taxes), 3. Road use (e.g. motorway taxes); 4. Congestion charges and city tolls (if taxes in national accounts), 5. Other means of transport (ships, airplanes, railways, etc.), 6. Flights and flight tickets, 7. Vehicle insurance (excludes general insurance taxes).

[29] Worthwhile noticing is that we also attempted to investigate the impact of the so called implicit tax rate measured as the ratio between energy tax revenues and final energy consumption calculated for a calendar year. This variable may potentially allow for obtaining more precise estimates of the effect of environmental tax on CO2 emissions, given that it implicitly (proportionally) accounts for energy intensity of individual country. However, this variable could not be included in the model to be estimated given its high correlation with income, and number of other energy intensity indicators included in the model (the pair-wise correlation coefficient is over 0.84 for these variables, and thus over 0.88 with income variable).

Table 1: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
CO_2	190	7.04	2.92	2.68	15.11
GDPpc	187	9001	5986	584	26260
Energy industry	190	529.38	226.38	222.48	1211.38
Energy tax	190	152.87	109.49	8.95	547.44
Transport tax	186	21.87	22.18	.20	106.32

Table 2: Correlation matrix (1995-2013)

	CO_2	GDPpc	$GDPpc^2$	EnergyIndustry	Energy_Tax	Transport_Tax
CO_2	1.00					
GDPpc	0.27	1.00				
$GDPpc^2$	0.27	0.99	1.00			
EnergyInd	0.68	0.19	0.20	1.00		
EnergyTax	0.26	0.91	0.91	0.17	1.00	
TransportTax	0.05	0.66	0.66	0.04	0.70	1.00

Overall, the descriptive statistics suggest huge differences across all indicators, including economic, structural and technological as well as environmental policy indicators. More precisely, levels of real per capita GDP ranges from about €584 to €26260 in the period under observation. Particularly pronounced are the differences in the levels of technological development across CEE countries proxied by the levels of FDI in manufacturing. The levels of pollution show huge discrepancies in terms of energy intensity of industries and overall production activity. Similarly, the levels of taxes vary greatly across countries. Total energy taxes per capita collected range between €8.95 to €547.44, while transport taxes per capita range between €0.20 to €106.32.

In view of this, the model developed in this analysis attempts to control for these profound differences in scope and character of environmental policy, patterns of technological and income convergence when examining the relationship between income and pollution. Hence we note that within country variations of all independent variables allow for model to be estimated with great precision since all variables exhibit significant variation across time.

Panel unit-root tests

Consideration of data properties in the EKC models seems important. The EKC hypothesis assumes long-run relationship between per capita income and environmental degradation that needs to be modelled properly taking into account the stationarity or nonstationarity in the data. The long-run relationship implies that EKC regression could be spurious regression in the case the variables are nonstationary. On that account we first proceed with unit root tests for the variables, and then proceed with the panel cointegration test to examine the presence of long-run relationship between the economic growth and environmental degradation.

Table 3 provides results of Unit-root tests. Specifically, we present the results of Im, Pesaran and Shin (IPS) and Harris-Tzvalis (HT) panel unit-root tests. While IPS test is suitable in small samples, HT test is preferable in case the number of time units (T) is larger than the number of cross-section units (N), which is the case of our sample, by assuming that the time dimension is fixed. This test can only be performed on balanced data. Therefore we present the results of this test for environment and economic indicators, while policy indicators are non-balanced series. Both tests investigate the null hypothesis of a unit root against the alternative that the variable is stationary. At the 5% level of significance, the null hypothesis of a unit root can only be rejected for $logCO_2$ variable, while GDPpc, and industry variables seem non-stationary processes according to HT test statistics. The results of IPS tests indicates that we cannot reject the null hypothesis that all series contain a unit-root at 5% level of significance. In other words, the IPS test statistics suggests that all series are nonstationary in level, that is the variables are integrated of order one (i.e. I(1)). Given the nature of our panel series, we proceed with investigating the cointegration relationship between the income and CO_2 pollution indicators, relaying on Pedroni cointegration test.

Table 3: Panel Unit Root Test

Variable	Im Pesaran and Shin (IPS)		Harris-Trivallis (HT)	
	Constant	(No time Trend)	Constant	(No time Trend)
$logCO_2$	-1.26053 (0.1037)		-2.4824** (0.0065)	
$logGDPpc$	-0.91781 (0.9133)		2.3695 (0.9911)	
$logGDPpc^2$	-1.41775 (0.5855)		2.3694 (0.9901)	
$logIndustry$			-0.6390 (0.2614)	
$logTransTax$	-2.04360 (0.8991)			
$logEnergyTax$	-2.00994 (0.1269)			

Note: We obtain similar results when we include time trend in test statistics. The results are not reported here due to space limitations. ** indicates the rejection of the null hypothesis at 5% level of significance.

Panel cointegration test

Given the long-run relationship between economic growth and environmental degradation substantiated in the literature, we proceed our empirical analysis by testing for cointegration between income per capita and per capita CO_2 emissions. Following Song et.al.(2008) we use panel

cointegration test proposed by Pedroni (1999). This test is preferable since it allows for heterogeneity among countries (cross-sectional units) which is important feature given the indicated cross-sectional dependence in this empirical analysis.

Table 4 presents the results of Pedroni test statistics. Precisely the table reports panel test statistics (*v, rho, t, adf* in the first column) relating to within group (dimension) investigation of stationarity of error processes by restricting the autoregressive parameter to be the same across all cross-sections. The group test statistics of the same parameters (second column) thus allow the autoregressive parameter to vary over the cross-section. The results of the test statistics give rise to the assumption that there is some cointegration in the system, with the panel *t* statistics significant at 5% level, and *rho* statistics significant at 10% we can reject the null hypothesis of no cointegration.

Table 4 Panel Cointegration test

Statistics	Panel	Group
v-statistics	0.6295	----
rho-statistics	-1.527*	-0.137
t-statistics	-1.725**	-1.074
adf	0.237	-0.3148

Note: All statistics are from Pedroni's procedure (1999) where the adjusted values can be compared to the N(0,1) distribution. The Pedroni (2004) statistics are one-sided tests with a critical value of -1.64 ($k < $ -1.64 implies rejection of the null), except the *v*-statistic that has a critical value of 1.64 ($k > 1.64$ suggests rejection of the null). *, ** indicates rejection of the null hypothesis of no-co-integration at 10% and 5%, levels of significance.

Method of investigation

In order to obtained asymioptically efficient, consistent estimators in panel series we proceed with estimating the EKC model in a cointegration dynamic framework. The results of unit-root and cointegration tests, reveal the potential problems of spuriousness in EKC regression due to serial correlation and endogeneity issues associated with non-stationary panel series with heterogenous unit-roots. There are several dynamic estimation techniques that deal with the problems of serial correlation and endogeneity in presence of cointegration. Kao and Chiang (2000) discuses the properties of different conitegration dynamic models, namely the FM-OLS and the dynamic OLS (D-OLS) estimators. They conclude that both estimators have negligable bias in small samples. On that account, we further proceed with choosing the optimal cointegration model. Namely, we estimate the EKC models relying on FM-OLS estimators that seem preferable cointegration model in our case for the following reasons. First, we operate with the small sample, and second the results of the unit root tests indicate that our model is model with I (1) regressors for which FM-VAR estimator seem suitable.

Fully modified least squares (FM-OLS) regressions was designed for modelling cointegration relationships by Phillips and Hansen (1990). Precisely, FM-OLS is panel cointegration estimation technique that modifies least squares to account for serial correlation effects and for the endogeneity in the regressors due to conitegration relationship. Phylips, P. (1993) study the asymptotic behaviour of FM-OLS in an econometric framework estimating various models that include different stationarity and unit-root properties of regressors in the estimated models e.g. modesl with

I(1) regressors, models with I(1) and I (0) regressors, models with unit roots, models with only stationary regressors and models with I(1) and I(0) regressors as well as deterministic trend. According to Phylips, P. (1993) findings FM-OLS cointegration model has some interesting and desirable features indicating hyperconsistency in the obtained coefficients when there is some cointegration in the system, and also considering the different nature of the deterministic processes of the regressors. Precisely, Phylips, P. (1993) point that when the system has full set of unit roots, as is the case in this analysis ' *the FM VAR estimator of the complete unit root matrix is hyperconsisten*t'. On that account FM-OLS model seems preferable. Table 5 reports the empirical results of the FM-OLS cointegration model.

4. Results

Table 5 report the results of econometric analysis. Precisely, we report the results of FM-OLS cointegration model. Precisely, the table reports the results with respect to the 3 models estimated; namely the reduced from equation, and the two models incorporating tax variables

First, we note that we estimate all equations with country specific and time specific effect. The results reported in Table 5, strongly suggest the existence of EKC hypothesis when the relationship between income per capita and per capita CO_2 emissions is studied in a dynamic cointegration framework. In all three models estimated we find strong evidence to support the significant relation between income and pollution. Precisely, the relationship depicts an inverted U hypothesis in reduced from equasion Model 2. Similarly, after controlling for environmental tax variables and energy intensity of industry (Models 2 and 3; the variables are included singly intro the regression equasion due to potential problem of multicolinearity between the environmental tax variables), the income variable and its quadratic transformation remain significant, suggesting strong evidence in support of EKC hypothesis in a transition economy context. However, these results need be treated with caution given the indicated problem of multicolinearity in the data (see Table 2b and Appendix 1 - the correlation matrix and the VIF statistics i.e. 1/VIF is below 0.2 for the energy tax variable).

The environment does not seem to be a sole function of income, since other factors tend to explain the shape of this relationship. The scale effect, proxied by the energy intensity of industries seem to be the most important contributor to environmental degradation as a priori expected. Lower economic efficiency of industries is associated with significant increases in CO_2 emissions as anticipated. This result implies the importance of technological progress and the subsequent increases in energy efficiency of industries. Lower energy consumption of industries in relative terms is associated with structural transformation of industries and higher value added of more technologically sophisticated produce.
Finally, energy taxes seem not to be effective and seem associated with higher CO_2 emissions. This is to say, that energy taxes are ineffective for most industrial activities which face no or limited alternatives to switch to lower energy use, while facing higher economic costs. In this particular context, companies may very likely be incapable of inducing new technologies to comply with stricter regulation, or to opt for alternatives, and continue scaling up their production activities albeit with higher economic costs jeopardising their productivity, investment and employment potentials. Transport taxes, on the other hand, are negatively related to CO_2 emissions but the results do not seem to render much support to the proposition that they present meaningful instrument in curbing CO_2 emissions. Transport taxes are expected to lower aggregate demand for

non-renewable resources such as oil and fossil-fuels, most probably because they can easily affect behavioural patterns of individual consumption.

While government action is needed to prevent and limit environmental degradation, misguided policies and inefective policy measures can generate opposite results. This is not to say that governments should reconsider imposition of energy taxes, since the costs of environmental degradation should be incorporated fully in prices. However, inducing environmentally friendly technological innovation, and energy efficient technologies in particular goes well beyond individual firm capacity, and taxing energy use may not lead to significant improvements in environmental quality. These policy efforts should be accompanied by systematic and concurred efforts of collectively inducing technological progress especially considering alternative energy use, support to the use of renewable energy and its production, as effective means of protecting the environment.

Finally, based on panel cointegration estimation and the obtained inverted U relationship between income per capita and per capita CO2 emissions, we calculated the turning points i.e. the threshold levels for all three models respectively. Essentially all threshold levels fall within the range of per capita income in the sample. However, it is interesting to note that the threshold level increases susbstantially once we control for energy tax suggesting the importance of integrating environmental regulation in determining the turning points.

Table 5: Results

	Model 1	**Model 2**	**Model 3**
logGDP pc	.517***	1.925***	.653***
	(2.32)	(9.06)	(2.85)
logGDP pc^2	-.038***	-.143***	-.034***
	(-2.53)	(-9.72)	(-2.23)
Energy industry	.228***	.243***	.255***
	(4.74)	(5.34)	(5.07)
Energy tax		.151***	
		(5.48)	
Transport tax			-.015
			(-1.47)
Turning point (TP)	809	13,062	803
No. of observations	186	186	182

Notes: TP denotes turning point of quadratic curve; Turning point is computed by $\tau\hat{} = exp(-0.5\hat{\beta}_1/\hat{\beta}_2)$; Z statistics are given in brackets; all regressions include a constant, country and time dummies (not reported in the table); *denotes statistical significance at the level of 10%, **denotes statistical significance at the level of 5%, ***denotes statistical significance at the level of 1%.

5. Conclusion

The purpose of this study was to analyse the presence of EKC hypothesis in the context of transition, namely CEEC-10 countries (i.e. Czech Republic, Slovenia, Slovakia, Poland, Hungary, Estonia, Latvia, Lithuania, Romania, Bulgaria). More importantly, an attempt has been made to identify what role does the environmental policy and its specific tax policy measures play in understanding the EKC hypothesis. The results of our analysis provide strong evidence on the presence of EKC hypothesis. Notwithstanding this, energy intensity of industry seems to be the most prominent factor associated with increases in CO_2 emissions. Hence, we find no evidence to support the proposition that energy taxes are effective means of lowering CO_2 emissions. The tax related incentive structures do not seem to lessen energy and pollution intensity, quite the contrary. Moreover, transport taxes although negatively related to CO_2, seem insignificant determinant of lower CO_2 emission.

This paper advances our understanding on the underlying mechanisms that explain the relationship between income and pollution, by incorporating environmental policy factors that have not been empirically investigated in previous literature, and by reflecting econometric issues suggested to be taken into consideration in empirical investigation of the EKC hypothesis.

Following the obtained results, on the ineffectiveness of environmental taxes, we question the popular perception that market-based instruments including environmental taxes are among the best policy options. Environmental taxes are commonly considered most effective, more easily administered and less costly compared to alternatives (OECD, 2001:2002). The basic premise is that the costs of environmental degradation should be fully incorporated into the costs of production - the view that the prices should fully reflect the costs of environmental degradation. However, we argue that market-based instruments may still not be effective let alone sufficient to translate into better environmental quality outcomes. Obviously, the impact of environmental taxes and other incentive structures depend on host of factors, but predominantly on the structure of industrial base and its diversification determining the character of further scaling and upgrading of production activities, degree of technological sophistication of firms and industries on which it is being imposed, the availability of technological solutions (presumably technologically friendly solutions) and the complexity of its adoption.

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Appendix 1

```
Variance inflation factors (VIF) statistic


    Variable |       VIF       1/VIF
-------------+---------------------
 log2RealGD~c |    361.33    0.002768
 logRealGDPpc |    342.24    0.002922
 logENERGYT~C |      6.90    0.144896
 logTRANSPO~C |      2.00    0.498843
 logINDUSTR~C |      1.08    0.922346
-------------+---------------------
    Mean VIF |    142.71


    Variable |       VIF       1/VIF
-------------+---------------------
 log2RealGD~c |    511.87    0.001954
 logRealGDPpc |    475.69    0.002102
 logENERGYT~C |     10.84    0.092271
  logFDImanpc |      3.35    0.298066
 logTRANSPO~C |      1.91    0.522998
 logINDUSTR~C |      1.34    0.746375
-------------+---------------------
    Mean VIF |    167.50
```
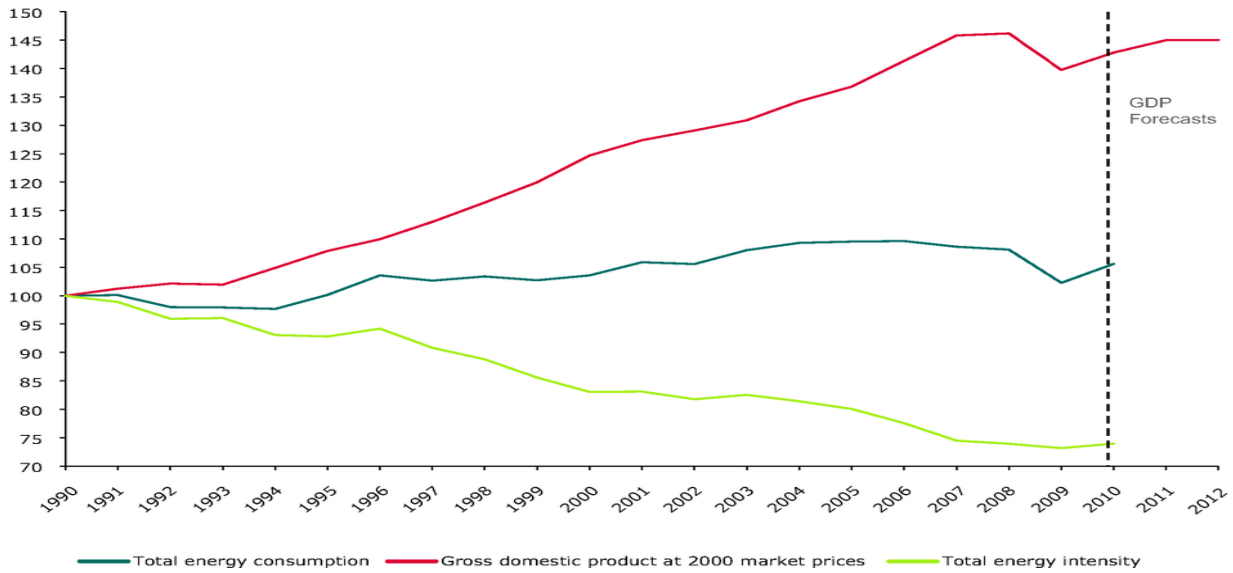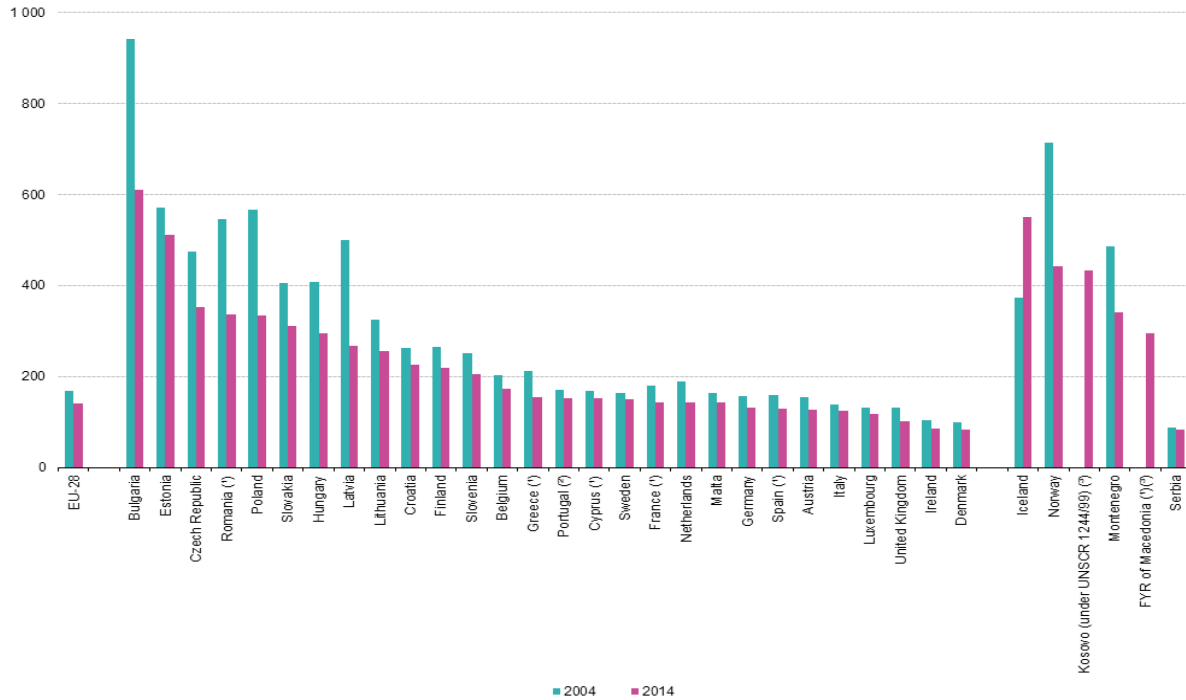
Appendix 2

Figure 1 Energy intensity and economic growth in the EU-28
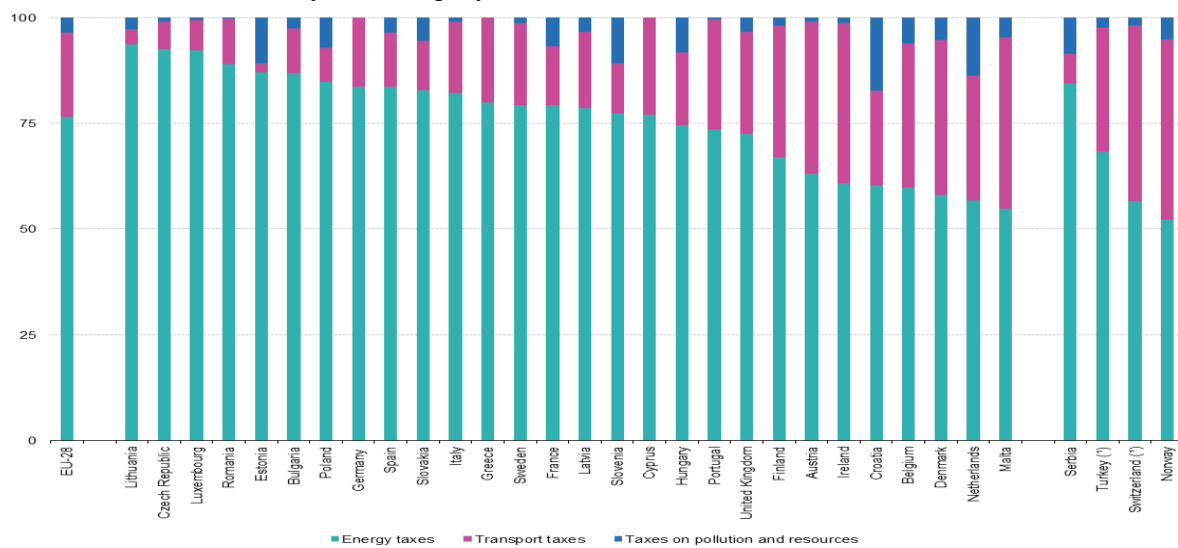
Index 1990=100

(source Eurostat)

Figure 2 Energy_intensity of the economy, 2004 and 2014_(kg of oil equivalent per 1000 EUR of GDP)

(source Eurostat)

357

Figure 3 Environmentaltaxes by tax category,2014 (% of total environmental taxes)

Note: Ranked on the share of energy taxes.
(¹) 2013.
Source: Eurostat (online data code: env_ac_tax)

REGULATORY IMPACT ASSESSMENT AND REDUCTION OF ADMINISTRATIVE OBSTACLES: THE CASE OF THE FEDERATION OF BOSNIA AND HERZEGOVINA

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Abstract

The aim of this paper is to present the potential and necessary long-term development of Regulatory Impact Assessment (RIA) and Reduction of Administrative Obstacles (RAO) in the legislative procedure, with the goal of adopting better and more purposeful laws and regulations for the society, citizens and businesses. To envisage new possibilities means to integrate the best EU practices with as many initiatives as possible for simplification and reduction of regulatory burden. This is why states and regions that wish to take part in the international framework of business must expand and harmonise the heritage of traditional law making in order to meet the new business conditions. The paper also provides an overview of prospective and urgent measures which should be taken at the level of the Federation of Bosnia and Herzegovina.

Keywords: *Regulatory Impact Assessment, better regulation, law, legislative procedure*
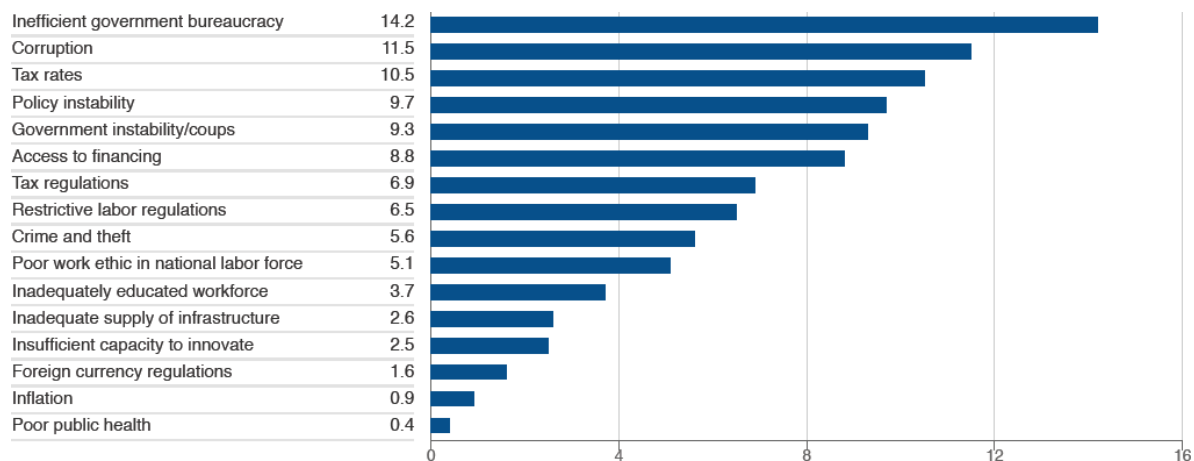JEL classification: K20

1. Introduction

The Global Competitiveness Report 2017-2018 was published at the moment when the world economy started showing signs of recovery, and when further steps of growth and economic development were being considered. Governments, companies and individuals have felt a high

level of uncertainty due to technological and geopolitical forces that have been reshaping the economic and political orders, thus shaking international relations and economic policy for the last 25 years. Simultaneously, the perception of the current economic condition does not satisfy human and social needs, which opens the door to the development of new models of progress oriented towards humans.

This year, BiH takes the 103rd position, with a slightly higher grade of 3.87 in comparison to the last year's 3.80. Based on that, it can be concluded that this year's report on the competitiveness of BiH has shown a number of weaknesses. Decision-makers must pay attention to these weaknesses and work urgently on their resolution, in order to make the country worthwhile investing in, and thereby increase the chances of a higher standard of living of all its citizens. The report emphasises that BiH and some other countries must implement structural reforms without delay in order to achieve a higher level of competitiveness as a precondition of economic growth and the much-coveted growth of employment. The biggest difficulties (negative influence on competitiveness) in Bosnia and Herzegovina are still the inefficient administration, high tax rates and inadequate legislation, as well as political instability and corruption. When compared to other countries in its surroundings, Bosnia and Herzegovina is still in the last position.

The following table (taken from the Global Competitiveness Report 2017-2018, World Economic Forum) presents the major factors that obstruct business activity in BiH, thus most strongly affecting the low level of competitiveness of the BiH economy.

Table 1: Major factors that obstruct business activity in BiH

Factor	Value
Inefficient government bureaucracy	14.2
Corruption	11.5
Tax rates	10.5
Policy instability	9.7
Government instability/coups	9.3
Access to financing	8.8
Tax regulations	6.9
Restrictive labor regulations	6.5
Crime and theft	5.6
Poor work ethic in national labor force	5.1
Inadequately educated workforce	3.7
Inadequate supply of infrastructure	2.6
Insufficient capacity to innovate	2.5
Foreign currency regulations	1.6
Inflation	0.9
Poor public health	0.4

Source: https://www.weforum.org/reports/the-global-competitiveness-report-2017-2018

SIGMA developed the Principles of Public Administration in 2014 to support the European Commission's (EC) reinforced approach to public administration reform (PAR) in the European Union (EU) enlargement process. In 2017, the Principles (OECD, *The Principles of Public Administration,* 2017) were updated and a new methodological framework was developed to improve clarity (OECD, *Methodological Framework for the Principles of Public Administration, 2017)* without changing the substance of the conceptual framework. The Principles define what

good public governance entails in practice, and outline the main requirements to be followed by countries during European integration (EI). The monitoring framework enables regular analysis of progress made in applying the Principles and setting country benchmarks. In 2015, SIGMA undertook comprehensive Baseline Measurement assessments for the seven EU enlargement candidate countries and potential candidates against the Principles, and has continued to monitor the progress of PAR since. The 2017 Monitoring Report, for the period May 2015 to June 2017, covers six key areas of reform: strategic framework for public administration reform, policy development and co-ordination, public service and human resource development, accountability, service delivery and public financial management, including public procurement and external audit (SIGMA, 2017:5)

The aim of this paper is to present the potential and necessary long-term development of Regulatory Impact Assessment (RIA) and reduction of administrative obstacles (RAO) in the legislative procedure, with the goal of adopting better and more purposeful laws and regulations for the society, citizens and businesses. This has direct positive effects on the competitiveness of Bosnia and Herzegovina, particularly on the identified factor that presents the greatest obstacle to doing business in BiH: "Inefficient government bureaucracy". (See table above: Major factors that obstruct business activity in BiH, Global Competitiveness Report 2017-2018). The need for a strategic orientation of the Government of the Federation of Bosnia and Herzegovina (FBiH Government) towards the increase of quality of legislation in the Federation of Bosnia and Herzegovina (FBiH) is evident.

In accordance with that, the review of the tools of RIA and RAO assessments will be provided below, followed by the elaboration of why the systems of RIA and RAO were established, and including recommendations for a potential strategic orientation of the development of this system in the Federation of Bosnia and Herzegovina. These tools represent the basis for improving the quality of legislation. This paper is based on the research within the project "Establishment and/or Strengthening of Capacities of the Institution/s for Control of Regulations and Establishment of the System of Reduction of Administrative Barriers". By using legislation and literature analysis of best practices, this paper attempts to present fresh research efforts and RIA perspectives of both the practitioners and academia in the FBiH, in order to improve the practice of RIA in the FBiH.

The paper is organised in the following manner. Section 2 lays out the importance of Regulatory Impact Assessment and its correlation to quality of regulatory decision making and legal efficiency. Section 3 presents the obstacles for efficient Regulatory Impact Assessment in Federation of Bosnia and Herzegovina. This is why it is essential to provide long-term planning, activities and follow-up of the system of Regulatory Impact Assessment and reduction of administrative obstacles, which implies the existence of a strategic document on such. Priority goals to overcome the obstacles of efficient Regulatory Impact Assessment at the level of the Federation of Bosnia and Herzegovina is described in Section 4. Finally, Section 5 provides concluding observations.

2. Definition and meaning of Regulatory Impact Assessment

In the contemporary society and economy, there is a constant need for new legislation. The creation of new legislation requires a different perspective of the procedure of drafting and compilation of legislation. The contemporary ("smart") regulation is based on the principle that new legislation must not create additional barriers to the development of the society and economy. New legislation needs to reflect quality, responsible and transparent public policy that

supports the development of the society, the growth of the economy and the creation of new values without unnecessary barriers to business activity (see more in Radaelli, 2005; Radaelli 2010; Radaelli, Dunlopa& Fritsch 2013)

The goals of governments are usually formulated in the form of public policies, and legislation is an instrument used to achieve political visions and objectives. The creation of new legislation inevitably produces costs and benefits for those that the legislation refers to, as well as for the society as a whole. In an attempt for the new regulation to bring more benefits than costs, governments use various tools for improving the quality of regulation and other acts. The governments that apply different tools for the improvement of quality of regulation implement the principles of better regulation, "smart" regulation. It is indisputable that the legal environment directly affects (both positively and negatively) the business environment, and that the business environment affects the competitiveness of a state and its attractiveness to investors.

Regulatory Impact Assessment (RIA) represents a systematic process of identification, examination and testing of expected outcomes of the proposed regulations. It represents an analytical document which is supposed to help in the process of decision-making. It does not represent a replacement of political decisions, but merely a quality basis for adopting such decisions. RIA is a particularly fascinating case for the analysis of the role of knowledge in policy-making because it has quasi-scientific ambitions, but also takes place at the heart of a government where political decisions are transformed into laws, regulations and other policy instruments (J. Hertin et al., 2009:413)

The fundamental goal of Regulatory Impact Assessment is to examine all available solutions in order to create a picture of their efficiency, which would enable selection of the best solution. RIA is the process from which we get the following:

- Quality analysis of the current state (lack of ex-post analyses),
- Legislator is provided with an impartial, precise and reliable analytical basis for adopting quality legislative provisions,
- Elaboration of how the proposed regulations should improve business environment and enable easier business activity (obligation from the reform agenda) and
- Construction of a factual foundation of options based on relevant evidence.

This is yet another reason why the issues of RIA must be given much more significance. They are, among other things, an unavoidable factor of legislative seriousness. Unfortunately, in Bosnia and Herzegovina they are usually taken superficially, not given the appropriate relevance, i.e. their application is of insufficient quality, very often done hastily and through urgent procedures.

The enactment of good legal regulations represents a challenge for the state and its authorities, at all the levels of government, which is supposed to provide the citizens and consumers the legal security that they expect, simultaneously creating the conditions that enable the companies to compete more effectively and be innovative in a very competitive global environment. Better regulation must become smart regulation, and this goal, at the stage of drafting and adopting regulation, must be a guideline to all those who participate in the process of adopting regulation in any capacity. In this sense, the EU system is broader and not exclusively oriented to the economic dimension. According to some economic analysis (Fritsch, Radaelli, Schrefler & Renda 2013:451) to specific items of cost-benefit analysis, results show that quantification and monetization were still relatively problematic areas.

In the European Economic Recovery Plan (COM 2008 800), it is indicated that, in the present context of economic and financial difficulties, with an increasing pressure on companies and households, the quality of regulatory environment is more important than ever before. Also recommendations in some policy papers are (Pickova, 2016:3) that the EU should aim for truly systematic process of legislative burden reduction by trying the knots of original impact assessment and the ex-post review, using unified methodology. Burden reduction targets should be set out at the beginning of the legislative process so the later evaluation of the legislation's impact can be measured against concrete data.

In OECD Regulatory Policy Working Paper is presented the potential contribution of a specific regulatory policy tool - Regulatory Impact Assessment. It does this - promoting inclusive growth through better regulation - by combining analyses of the nature of the inclusive growth and its relationship with other policy goals and the role of RIA within the regulatory process (Deighton-Smith, Erbacci, Kauffmann 2016:47).

To this extent, for the question and research that this paper tries to address, very important is a case study analysis of the World Bank Group[30] which presented a global unique data on RIA implementation worldwide, highlighting best practices and identifying areas for improvement. Regulatory Impact Assessment (RIA) is recognized by most developed countries as a key instrument to improve the quality of regulatory decision making. RIAs are widely used within the member countries of the Organisation for Economic Co-operation and Development (OECD). Nowadays, an increasing number of developing countries implement new RIA procedures in their regulatory governance systems as well. According to the abovementioned case study, RIA plays a crucial role in improving rule making quality and promoting good governance. Authors of this study concluded that even if assessments of a potential impact of regulatory changes are more highly concentrated in richer countries than in the poorer ones, a quality RIA can be achieved at all income levels.

In the Key Findings of the 2016 Global Indicators of Regulatory Governance (WB, 2016) among the 185 countries sampled by the Global Indicators of Regulatory Governance, regulators in 90 of the 185 economies surveyed do not conduct Regulatory Impact Assessment for the proposed regulations. For those that do, the impact assessments vary in scope, charting the administrative cost to the government of enforcing the new regulation and expected compliance costs for the private sector. Survey results show that the scope and purpose of impact assessments encompass a wide range of practices and methods.

It is an internationally accepted opinion that better regulation is vital for the economic competitiveness of a country. Overly burdensome regulations and public institutions that discourage the creation or expansion of business obstruct economic growth. This is particularly relevant in the context of BiH, considering that, in the World Bank's publication "Doing Business 2018" (index of ease of doing business in the world), BiH is in the 86th position out of 190 countries, which is a low ranking as compared to other European countries.

According to some research and predictions from Open Europe, the cumulative cost of regulation introduced between 1998 and 2008 for all 27 EU member states is € 1.4 trillion. Of this, 66%, or €928 billion, is EU-sourced. If current trends continue, by 2018, the cost of EU regulation introduced since 1998 will have risen to more than €3.017 trillion. This is over €15,000 per household in the EU (Mats Persson, Stephen Booth & Sarah Gaskell, 2009:7)

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[30] This case study was written by Joseph Lemoine; the data was collected by the GIRG team under the general supervision of Melissa Johns and Valentina Saltane. All the data used for this case study are available on the GIRG website: rulemaking.worldbank.org.

Various regulatory and administrative burdens, restrictions, disproportionate legal obligations, requirements and conditions for being granted licences, the long waiting period, bureaucratic corruption, the obligation to publish data and information and specific legal regulations represent obstacles to the competitiveness of FBiH. The conditions for the growth and competitiveness of the economy may only be created in the circumstances where the public administration improves the legislation in order to achieve as good a framework for business freedom as possible (see more in: Annoni, Dijkstra, 2017). This is particularly important for the growing service sector, as well as for the development of contemporary manufacturing production. In practice, numerous European countries have civil servants who work explicitly on the detection and advocacy of obstacle elimination, which is unfortunately not the practice in FBiH.

The top five most competitive economies in the world remain the same as in the previous year, but their order changes. The United States returns to the first spot, followed by Hong Kong, Singapore, the Netherlands and Switzerland. The Netherlands moves one place to the 4th position, swapping with Switzerland which moves down to the 5th (IMD World Competitiveness Rankings 2018 Results).

In a cross-country analysis, Jalilian, Kirkpatrick and Parker (2006:99) tested the hypothesis that the efficiency and quality of regulation affects the economic performance of an economy. Two proxies for regulatory effectiveness were included separately and then combined as the determinants of economic growth performance, using both cross-sectional and panel data methods. The results from both sets of modelling suggest a strong causal link between regulatory quality and economic growth and confirm that the standard of regulation matters for economic performance.

Arguably, however, the performance of the new regulatory state remains underresearched, especially in the context of developing countries with their own peculiar economic and social problems and institutional characteristics. Building effective regulatory structures in the developing countries is not simply an issue of the technical design of regulatory instruments, it is also concerned with the quality of supporting regulatory institutions and capacity (see more in: Arndt, 2015). Many of the institutions that support markets are publicly provided, and the effectiveness of these regulatory institutions will be an important determinant of how well markets function. The quality of regulatory governance will affect regulatory outcomes, which in turn can be expected to impact economic growth.

3. Regulatory Impact Assesment and reduction of administrative obstacles in FBiH: *de lege lata*

Contemporary and modern public administration supports the development of the society and market economy by creating quality legislation which is flexible and suits the needs of the society, economy and citizens. Quality legislation is a precondition of development, and RIA is one of the tools for drafting better policies and quality legislation.

Fundamentally, RIA is the most important tool that increases the quality of regulation through an open, transparent and active search for more effective methods of resolving problems and achieving the set goals without the creation of additional barriers for the citizens, civil society organisations and business community, by the creation of more positive impacts, i.e. benefits in relation to the expected negative effects, i.e. costs.

In SIGMA's report for 2017, the implementation of the *Principle 10: The policy-making and legal-drafting process is evidence-based, and impact assessment is consistently used across ministries,* it is concluded that"Despite RIA requirements and availability of relevant methodologies and guidelines at the Entity level, the overall quality of the analyses supporting policy proposals is very poor across all levels of the administration. There are serious shortcomings and the final decision making on policy proposals across all levels is not based on evidence and analysis. The requirement to assess the financial implications of policy proposals has been regulated at all levels of the administration but, in practice, this is not implemented consistently." (SIGMA 2017:61). As it is clearly stated in SIGMA's report for 2017, "The quality of the policy-development process remains low. A recommendation in SIGMA's 2015 Baseline Measurement Report with regard to RIA has not been implemented." (SIGMA 2017:29)

At the level of FBiH, the Regulation on the Secretariat General of the Government of FBiH (Official Gazette of FBiH, 40/13) was adopted, pursuant to which the Secretariat General, among other things, performs the following tasks: coordinating the tasks that refer to the reform of public administration and preparing appropriate reports for the Government; ensuring professional and organisational foundations for the introduction of the methodology of Regulatory Impact Assessment; coordinating the cooperation of the FBiH ministries and other FBiH administrative authorities and the FBiH administrative organisations, as well as organisations that implement public authorisations with the business community and civil society, in order to conduct the procedures of Regulatory Impact Assessment; establishing and maintaining the electronic register of administrative procedures in the Federation of Bosnia and Herzegovina; as well as coordinating the cooperation of the Government with the civil society organisations. The normative framework for RIA in the FBiH consists of the Decree on Regulatory Impact Assessment Procedure, which was adopted in 2014.

The level of application of RIA in practice is still in infancy and is not sufficient, primarily because there are no specific knowledges and skills in all the institutions that would appropriately implement the adopted methodology, apply analytical methods and conduct the assessments of potential effects of policies/regulations in their daily work. Accordingly, significant progress in the substantial quality of the adopted policies/regulations has not yet been made, which would be the result of the previous assessment of potential effects of the most relevant solutions contained in the regulations/policies, systematic oversight of the application of the adopted policies/regulations and the periodic audit (ex post) evaluation of the adopted policies/regulations.

According to SIGMA's report,an overall indicator value for professional development and training for civil servants is 2. This indicator measures the extent to which the legal framework and the organisation of training, performance appraisal, mobility and promotion support fair professional development in the civil service (SIGMA 2017:94). "The HR development of civil servants is regulated in the legislation at all levels, but in practice the resources for training are limited, in some cases the training budget was reduced to zero. Performance appraisal regulations are in place, but grade inflation indicates that it is carried out only as a paper exercise or it is not being used. The mobility and transfer of civil servants are regulated at all levels, but rarely used in practice." (SIGMA 2017:94)

Considering this lack of experience and practice of RIA at the level of FBiH, and for the purpose of identification and elimination of potential risks, upon the analyses which have

been or are being conducted at the level of FBiH, the following were identified as common problems in the practice of RIA implementation:

- a low level of application of analytical procedures that precede the drafting of regulations,
- unsystematic and sporadic approach to the substantial examination of regulatory impact,
- RIA is used to justify the decisions that had already been made,
- RIA is seen as merely a new bureaucratic procedure, and
- appropriate means (measures) for their implementation are not provided for.

In accordance with this, as a proposition of priority goals, there have been attempts to eliminate the identified risks in the application of RIA.

One of the major causes of low competitiveness of the FBiH economy is a high level of administrative burdens. Regulations significantly burden the business sector in the creation of value and they make doing business difficult. Therefore, the main goals of the FBiH should be to administratively disburden the economy for ca. 30% and eliminate administrative barriers to doing business in the time period from 2018 to 2021. According to the indicative calculations of employers in both entities, nearly a billion BAM is taken by parafiscal levies from the BiH economy.

According to certain existing research, there are over 200 different parafiscal levies in BiH. Out of those, 68 parafiscal levies are at the level of FBiH. Relevant research shows that the burden on employers in BiH is the highest in the region and amongst the highest in Europe and amounts to 72.2%. For every BAM, 0.72 BAM must be paid to the state. With all the parafiscal levies at the lower levels, depending on the canton or the municipality, employers must pay up to 0.90 BAM for each BAM of salaries paid up. A separate matter of parafiscal levies concerns the problem with investors. One of the key measures of the FBiH Government must be the Register of Parafiscal Levies and the model of reduction and rationalisation of such burdens on the economy. This will mark the beginning of administrative economy and the creation of competitive economy in the FBiH.

In order to implement the SCM method which would precede such measures, it is necessary to select regulatory areas which are assessed to have significant burdens on the economy. The selection of such areas needs to be the result of consultations with the business sector. Taking into consideration the experiences of the neighbouring countries in similar activities, as well as the existing consultations with the business community, the SCM measurements and administrative relief in the following eight regulatory areas are proposed: establishment of business entities, sole proprietorships, sanitary and health conditions, trade, real estate brokerage, occupational safety, public procurement and parafiscal levies.

4. Priority goals: de lege ferenda

An active role of all key players in the procedure of RIA and RAO will contribute to the quality of the RIAs created and enable the adoption of legal regulations which will be of better quality and clarity, and will not generate administrative barriers. This is why it is essential to provide long-term planning, activities and follow-up of the system of Regulatory Impact Assessment and reduction of administrative obstacles, which implies the existence of a strategic document on such. The development of this system relies on the vision, mission and objectives which are intended to be accomplished.

As previously mentioned, the objective of this paper is to present the potential orientation of the FBiH Government towards the increase of the quality of legislation at the level of FBiH, through

appropriate application of RIA and RAO in legislative procedures, and in accordance with the adopted Methodology of Impact Assessment and SCM Method. A potential strategic orientation of the development of RIA and RAO is provided below.

Through appropriate application of RIA, better legislation needs to be ensured, so that legislation achieves the set objectives with low costs and without unnecessary barriers. Through the development of RIA, the FBiH Government lays the foundation for the creation of better and "smart" regulation. The principle of "smart" regulation is to create flexible, simple, intelligible regulation of good quality, which provides the basis for the development of the economy and society. The existing and new legislation is a product consumed by business entities, civil society organisations and citizens in daily operations and life.
Through appropriate reduction of administrative barriers, the development of the economy and society needs to be ensured. The purpose is to create an incentive investment climate and simpler business requirements. One of the main causes of low competitiveness of the FBiH economy is a high level of administrative burdens. Regulations significantly burden the business sector in the creation of value and hinder business activity. Therefore, it is recommended to administratively relieve the economy for ca. 30% and eliminate administrative barriers to business activity.

Legislative framework needs to provide stability and simplicity of regulation, with low costs of the use of legal rules and without the unnecessary daily barriers for those that such rules refer to. Such a legislative framework is the foundation for stability and market development, the creation of equal market opportunities for entrepreneurship, development of different initiatives of civil society organisations to create and strengthen social equity and equality, along with the protection and preservation of the living and natural environment.

An active cooperation and expertise of all participants in the legislative procedure and the RIA and RAO procedures are a precondition for the development and successful implementation of RIA and RAO. To create quality and "smart" legislation, it is necessary to plan regulation in order to achieve an optimal usage of the limited resources and disburden the economy from unnecessary administrative barriers. To achieve such legislation, the impacts of the new regulations must be assessed, taking the economic, social and financial factors in consideration, as well as the effects on the environment, and the reductions of administrative barriers must be duly identified.

The mission of the FBiH Government should be to "ensure the development of an effective system of RIA and RAO" through an active role of all the authorities responsible for the RIA and RAO system, as well as with the participation of other authorities of state administration.

The priority goals of the FBiH Government should ensure the implementation of the RIA procedure in accordance with the Methodology of Impact Assessment contained within the Unified Rules and develop the good practice of RIA application. This goal encompasses several activities that are aimed at reciprocal communication and exchange of acquired knowledge in the implementation of RIA with the experts from the region and the EU. In addition, activities in this priority goal include regular collection of data on the application of RIA which will identify problems and risks of application. By analysing them, appropriate corrective measures will be proposed, to eliminate problems in the application or analysis of good practice by proposing measures for the improvement of the RIA procedure.

5. Final considerations and conclusions

An important segment of adopting better regulation is to have a "big picture" of their economic, social and environmental impacts. Regulatory Impact Assessment, as a tool for creating a better legal framework, and therefore also business framework, ensures for the regulation to be based on the best possible facts, hence making it more efficient. In addition, the reduction of administrative barriers is a priority part of the overall reform process aimed at improving business environment and increasing competitiveness. In order to achieve this, the Government of the Federation of Bosnia and Herzegovina should take the following steps as strategic priorities and potential courses of action, with clear operational plans: 1. work intensively on the reduction of administrative barriers by the application of the SCM method (standard cost model); 2. implement a regulatory "guillotine" – which would imply the analysis in accordance with the priorities of the existing legislation (laws and regulations), and the provisions considered unnecessary would be abolished or simplified; 3. implement the steps of a normative reconstitution – the procedure in which every part of legislation (laws and regulations) is re-examined in reference to the question whether it should be regulated by other existing acts: 4. implement the consolidation of legislation – based on the proposal, consolidated texts of legislation (laws and regulations) are drafted based on all the amendments made in the past or consolidated texts of regulations; 5. continuously follow the enforcement of regulations and, to that effect, collect the necessary data in accordance with the previously set time periods; and based on that,as the last activity, propose the amendments to the regulations if the set goals of the regulations have not been accomplished. Better regulation does not imply "more" or "less" regulation; better regulation is the regulation that contributes to the achievement of the adopted policies, i.e. common goals of governments, citizens and all influential interest groups.

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LINKING STUDENTS' SATISFACTION WITH COMMUNICATION AND THEIR OVERALL SATISFACTION: STUDENT AS A CUSTOMER APPROACH

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Abstract

The higher education sector has been growing rapidly in recent decades. The impact of globalization has not been bypassed by higher education. The emergence of privately owned higher education institutions in contrast to those owned by the state has led to the creation of harsh competition in the higher education market and the necessity for applying the general theoretical principles of management and marketing in the governance of these institutions. In such an academic environment where students have many options available to them, factors that enable educational institutions to attract and retain students should be seriously studied This study is designed to examine whether satisfaction with informal communication and communication with teaching staff significantly contributes to the overall satisfaction and to assess the impact of three factors (satisfaction with informal communication, communication with teaching staff and type of the faculty) on the likelihood that respondents would respond in order to recommend the same faculty to others. Students' responses were measured through an adapted questionnaire based on the Likert scale from 1 to 7. The research sample includes 519 students from the public and private higher education institutions. The results of the regression analysis revealed a significant and positive impact of students' satisfaction with communication with the teaching staff on the overall satisfaction. However, students' satisfaction with informal communication does not contribute in explaining students' overall satisfaction. Logistical regression was conducted to assess the impact of three factors on the likelihood that respondents would recommend the faculty to others. Satisfaction with informal communication and satisfaction with communication with teaching staff have made a statistically significant contribution to the model. Type of the faculty did not give a statistically significant contribution to the model.

Keywords: Higher education, student-as-customer, student' satisfaction, communication

JEL classification: I23, M29

1. Introduction

Higher education is considered to be one of the most important components for the development of an individual but also of the economic and social development of any nation (Mukhtar et al., 2015). Knowledge, as a result of the process of education and as a new type of capital, has an increasing impact on economic development of a country in contemporary world economic trends, such as globalization and transition into post-industrialized countries society (Cizmic and Cizmic, 2007).

The higher education sector has been growing rapidly in recent decades. The impact of globalization has not been bypassed by higher education. The emergence of privately owned higher education institutions in contrast to those owned by the state has led to the creation of harsh competition in the higher education market and the necessity for applying the general theoretical principles of management and marketing in the governance of these institutions. Higher education institutions must apply market-oriented management strategies, concepts, formulas and techniques in order to distinguish themselves from competition and attract as many students as possible while meeting their needs and expectations, and thus increase their income. In this competitive environment in which they operate, today's higher education institutions face the challenge of retaining existing students, attracting new ones and ensuring their satisfaction with academic experience (Grossman and Rhodes, 2002, Thomas and Galambos, 2004). As a result, universities must consider themselves as a "profit-making organisation" that is operating in a competitive marketplace (Oldfield and Baron, 2000). Academics have noted the marketing of higher education as a "necessary evil" that has relatively little to do with the ultimate goal of a university (Bush et al. 1998). When it comes to university staff, there is a need to develop awareness of the necessity of satisfying the needs of students in a way that meets customers' expectations in the same manner as meeting customers' expectations in business organizations (Kanji et al., 1999).

The concept of a student as a customer is not new. It was used by many authors (Crawford, 1991; Hill, 1995; Narasimhan, 2001). Students pay tuition and expect the greatest possible equivalent for the money they give, and for this reason, students are viewed as costumers whose satisfaction is extremely important to keep existing and attracting new students. The goal of a higher education institution must not be profit but the satisfaction of customers, in other words, students. A satisfied customer will come again, spread the word about his/her content and stay loyal. Hence, the higher education institution will maximize its profit (Scott, 1999).

In such an academic environment where students have many options available to them, factors that enable educational institutions to attract and retain students should be seriously studied. .

2. Literature review and theoretical framework

Appleton-Knapp and Krentler (2006) imply that students' satisfaction with their educational experience should be the desired outcome in the management of higher education institutions. Satisfied customers often become loyal, repeat customers, meaning

they will continue to purchase the products and/or services and recommend them to others. In other words, students' satisfaction will result in recommendations of that certain faculty to friends, neighbors and colleagues (Blackmore et al., 2006). A large number of potential students decide on a particular faculty based on the experience of others. The application of the Bologna Declaration in higher education systems enabled student mobility from one university to another and that imposed on universities the necessity of treating a student as a customer, making their voices heard and for them to be respected (William, 2002).

Keeping existing students is as important as bringing new ones because it is much more expensive to attract new students than to retain existing ones (Helgesen and Nesset, 2007). Satisfaction is the feeling of happiness that people obtain when they have fulfilled his or her needs and desires (Saif, 2014). Customer satisfaction is achieved when a product or service meets customers' expectations (Petruzzellis, 2006).

Students' satisfaction can be defined as the perception of enjoyment and accomplishment in the learning environment (Sweeney and Ingram, 2001). It is a positive predecessor of student loyalty, but also a result of the education system (Navarro, 2005).

When it comes to students' satisfaction, one cannot ignore the Self-Efficacy Theory (Bandura, 1977). This theory relates to beliefs about one's capabilities to learn or to perform certain activities. Essentially, students set academic and personal goals based on their own self-assessment. Students with a high self-assessment level visualize positive outcomes and set high goals for themselves. Those with lower self-assessment levels are constantly doubting themselves. They visualize scenarios that contain obstacles to achieving their goals and predict failure. Communication between a student and a professor plays a key role in helping students achieve greater success and a higher level of self-efficacy.

According to Maslow (1943), humans need to feel a sense of belonging and acceptance and these needs come right after their physiological and safety needs. The hierarchy of the need developed by Abraham Maslow (1943) is focused on the influence of motivation on people. There are five different levels of Maslow's hierarchy of needs: physiological needs, security and safety needs, social needs, the need for appreciation and respect (esteem needs), and self-actualization needs. In order to achieve ultimate goals, however, a number of more basic needs must be met. The hierarchy of needs can serve as a conceptual framework for communication at the faculty. Specifically, the physiological needs of students include the need for books, computers, internet connection. Security and safety needs are met in a way that colleagues, professors, teaching assistants and other faculty staff make the student feel comfortable at the university. Social needs are met through communication with the teaching staff and other faculty members, as well as with colleagues. Positive and intensified interaction at the faculty will ensure that the needs for appreciation and respect are met. Meeting the need for self-actualization is achieved by allowing students to demand the knowledge they deem necessary; allowing them to personalize the learning process and allowing students the opportunity to give their own opinions on how to transfer knowledge.

Student satisfaction is linked with students' perception of enjoyment and accomplishment in the learning environment (Sweeney and Ingram, 2001). The sense of belonging to the group and being accepted by other students are key factors in achieving success and completing studies (Kumar, Johnson, and Hardemon, 2013). Therefore, in

order to achieve success in studies which determine the satisfaction of students, it is necessary, according to the Hierarchy of needs (Maslow, 1943), to develop a sense of belonging to the faculty and satisfaction with the communication with colleagues and faculty staff.

Student satisfaction is a multidimensional process conditioned by various factors (Weerasinghe et al., 2017). Numerous studies were dealing with factors that influence students' satisfaction and their retention. In these studies, factors that were often underestimated are related to communication within the faculty. On a global scale, interest has been shown to explore the importance of effective communication in organizations and in educational institutions (Bush, 2011; Gorton and Alston, 2010, OECD, 2008). Informal contacts of students with faculty staff are connected with the retention of students (Terenzini and Pascarella, 1980) and the retention of students is conditioned by students' satisfaction (Druzdzel and Glymor, 1995). Garcia-Aracil (2009) has conducted a survey in eleven European countries and the results show that contact with colleagues has a positive impact on students' satisfaction. According to research conducted by Yusoff et al. (2015), students' relationship with professors and teaching assistants, assistance provided by the faculty staff and received feedback all have a significant impact on student satisfaction. Nasser et al. (2008) investigated students' knowledge of services and programs in relation to their satisfaction. The study found that great knowledge about university procedures, rules and reputation raises the level of student satisfaction. The quality of feedback, the relationship between teachers and students and the interaction with colleagues have a great impact on students' satisfaction with the university (Kuh and Hu, 2001;Sojkin, 2012).

Douglas et al (2008) concluded that communication is one of the most important sources of satisfaction and dissatisfaction among students at the faculty.

3. Methodology

3.1. Research objectives and questions

This study is designed to examine whether satisfaction with informal communication and communication with teaching staff significantly contributes to the overall satisfaction and to assess the impact of three factors (satisfaction with informal communication, communication with teaching staff and type of the faculty) on the likelihood that respondents would respond in order to recommend the same faculty to others.

The following are the research questions in this study:
Q1. Is possible to explain the variance of student's overall satisfaction with faculty by the influence of satisfaction with informal communication?
Q2. Is possible to explain the variance of student's overall satisfaction with faculty by the influence of satisfaction with communication with teaching staff?
Q3. Does satisfaction with informal communication, communication with teaching staff and type of the faculty predict probablity that respondents would respond in order to recommend the faculty to others?

3.2. Research sample

The questionnaire was distributed to 600 undergraduate students in private and public (self-financing students) sector faculties in Bosnia and Herzegovina. Out of 600 distributed questionnaires, 552 completed questionnaires were received. 519 of them were usable. Prior to completing the questionnaire, the respondents received information on the purpose of the research and instructions on how to fill in the questionnaire accurately.

3.3. Data collection instrument

A questionnaire as a method of collecting data was used in this survey. The questionnaire consists of five sections: demographic characteristics of the respondents, overall satisfaction with faculty, satisfaction with communication and a single item question, „Would you recommend this study to others". Overall satisfaction with faculty was measured by single-item question, „ How well are you satisfied with your faculty", on a Licert scale of 1 (extremly dissatisfied) to 7 (extremly satisfied). The questionnaire used for measuring satisfaction with communication is based on the questionnaire developed by Ana Tkalac Vercic (2009), called UPZIK, which uses the Likert scale from 1 to 7, with 1 being extremely dissatisfied and 7 extremely satisfied. The questionnaire was modified for research purposes at a higher education institution. The question, „Would you recommend this faculty to others", had two possible answers, yes and no.

3.4. Data analysis

The data were analyzed using the Statistical Package for the Social Sciences (SPSS). A principal component analysis (PCA) was conducted on 9 items of the satisfaction with communication scale with direct oblimin rotation. Regression analysis was used to examine whether satisfaction with informal communication and communication with teaching staff significantly contributes to the overall satisfaction. Logistical regression was conducted to assess the impact of three factors on the likelihood that respondents would respond in order to recommend the faculty to others.

4. Results And Discussion

4.1. Profile of the respondents

Demographic information includes the following characteristics of the respondents: gender, age, year of study and faculty type(private/public). Demographic characteristics presented in Table 1. are based on frequencies and percentages.

In this study, there were 195 (38,2%) male students and 316 female students (61,8%). 8 (1,5%) students did not respond about gender.

This study included 423 (81,8%) students between the age of 18-25; 33 (6,4%) students between the age 25-30; 41 (7,9%) betweenthe age 31-40; 17 (3,3%) students

between the age 41-50 and 3 (0,6%) students over 50 years. 2 (0,4%) students did not respond about age.

197 (38,1%) students are at first, 141 (27,3%) are on second, 97 (18,8%) are on third and 79 (15,9%) on fourth year of study. 3 (0,6%) students did not respond about year of study.

In the study 263 (50,7%) students are from private faculties and 256 (49,3%) students are from public faculties.

Tabel 1. Profile of the respondents

	Frequency	Percent	Valid Percent	Cumulative percent
GENDER				
Male	195	37.6%	38,2%	38,2%
Female	316	60,9%	61,8%	100,0%
Missing	8	1,5%	100,0%	
Total	519	100,0%		
AGE				
18-25	423	81,5%	81,8%	81,80%
25-30	33	6,4%	6,4%	88,2%
31-40	41	7,9%	7,9%	96,1%
41-50	17	3,3%	3,3%	99,4%
over 50	3	0,6%	0,6%	100,0%
Missing	2	0.4%	100%	
Total	519	100,0%		
YEAR OF STUDY				
First	197	38,0%	38,1%	38.1%
Second	141	27,2%	27,3%	65,4%
Third	97	18,7%	18,8%	84,1%
Fourth	79	15,8%	15,9%	100,0%
Missing	3	0,4%	0,6%	
Total	519	100,0%	100,0%	
FACULTY TYPE				
Private	263	50,7%	50,7%	50,7%
Public	256	49,3%	49,3%	100%
Total	519	100,%	100.0	

4.2. Descriptive statistics for variables

For the dependent variable overall satisfaction, only one item measurement on the Likert's seven-point scale was used. The independent variable - satisfaction with communication

with the teaching staff consists of four parts, and the independent variable - satisfaction with informal communication includes five parts. The Likert's seven-point scale was used to measure the independent variables.

In Table 2. it can be noticed that students are generally satisfied with higher education (M = 5.19) as well as with communication with teaching staff (M = 5.05) and with informal communication (M = 5.33). The lowest result of overall satisfaction is 2, which tells us that there are no students who are extremely dissatisfied with their studies. The highest result of overall satisfaction is 7, which tells us that there are students who are extremely satisfied with their studies. Results for the independent variables - satisfaction with communication with the teaching staff and for the independent variable - satisfaction with informal communication range from 1 to 7. Therefore, we see that the results show that there are students who are extremely dissatisfied with informal communication and with communication with the teaching staff, as well as those who are extremely satisfied with both dimension of communication.

Table 3. shows that 419 (81,2%) students would recommend faculty to others and 97 (18,8%) would not. 3 (0,6%) students did not respond to this question.

Table 2. Descriptive statistics for satisfaction variables

	N	Minimum	Maximum	Mean
Overall satisfaction	519	2	7	5.19
Satisfaction with informal communication	519	1	7	5.33
Satisfaction with communication with the teaching staff	519	1	7	5.05
Valid N (listwise)	519			

Table 3. Descriptive statistics for recommendation variable

Would you recommend this faculty to others					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	419	80.7	81.2	81.2
	2 No	97	18.7	18.8	100.0
	Total	516	99.4	100.0	
Missing	System	3	.6		
Total		519	100.0		

4.3. Reliability of the research

The results of the reliability test are presented in Table 5. The Cronbach coefficient Alpha = 0.898, points to a very good reliability and internal agreement of the measuring scale for this sample of respondents.

Tabel 4. Statistical reliability

Reliability Statistics	
Cronbach's Alpha	N of Items
.898	9

4.4. Principal component analysis for satisfaction with communication

A principal component analysis (PCA) was conducted on 9 items of the satisfaction with communication scale with direct oblimin rotation. Before conducting the analysis, the suitability of data for analysis was evaluated. A review of the correlation matrix revealed many coefficients of a value of 0.3 and higher and no coefficient greater than 0,9 what would indicate to the problem of multicollinearity in the data. The value of the Kaiser-Meyer-Olkin's measure is 0.853, which exceeds the recommended value of 0.6. Bartlett's sphericity test has reached a statistical significance, which points to the factuality of the correlation matrix.

Table 5. KMO and Bartlett's test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.853
Bartlett's Test of Sphericity	Approx. Chi-Square	3100.772
	df	36
	Sig.	.000

Analysis of the main components revealed the presence of two components with eigenvalues over 1 (Kaiser's criterion) which explain 55,8% and 14,4% of the variance. This two-factor solution explained a total of 70,2% variance. (Tabel 6.)

Table 6. Results of PCA

	Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	5,019	55,764	55,764	5,019	55,764	55,764	4,312
2	1,297	14,411	70,175	1,297	14,411	70,175	3,931
3	,910	10,112	80,286				
4	,467	5,188	85,474				
5	,405	4,503	89,977				
6	,299	3,320	93,298				
7	,275	3,056	96,354				
8	,193	2,143	98,497				
9	,135	1,503	100,000				
Extraction Method: Principal Component Analysis.							
a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.							

In order to better understand these two factors, the oblique rotation was used. The rotation revealed the existence of a simple structure. The first factor has five factor loadings and the second factor has four factor loadings.

Table 7. shows the factor loadings of all variables and the proportion of common variance within a variable. The items that cluster on the same components suggest that component 1 represents students' satisfaction with informal communication. Component 2 represents students' satisfaction with communication with the teaching staff . In the part of the table that refers to the part of the variance explained by the common factors, we see that all variables fit well into their factor with other variables because they have a value greater than 0.3.

Respecting Kaiser's criterion (retaining components with eigenvalues over 1), these two components will be retained for further analysis. This criterion is accurate when the sample size exceeds 250 and the average communality is greater than 0,6 what we have in our sample.

Table 7. Matrix of factor loadings and communalities for PCA with oblique rotation of a two-factor solution for items of the satisfaction with communication scale

Item	Factor loadings		Part of the variance explained by the respective factors
	Factor 1	Factor 2	
The success of communicating with colleagues	0,839	-0,116	0,617
Availability of colleagues	0,821	-0,064	0,623
The amount of time spent in informal communication	0,800	0,141	0,778
The usefulness of information transmitted informally	0,784	0,103	0,710
Number of decisions made on the basis of informal communication	0,773	0,162	0,754
The promptness of the teaching staff response to the mail	-0,123	0,879	0,675
Kindness and curtsy of the teaching staff in communication with students that need assistance	0.087	0,811	0.738
Familiarity of the teaching staff with students' problems/difficulties	0,46	0,798	0.677
Availability of the teaching staff	0,137	0,782	0,743

4.5. Regression analysis on overall satisfaction

A review of the results of the regression analysis in Table 8. indicates that the overall regression (F = 80,001) is statistically significant at the level of 0.01 (Sig.F). The coefficient of determination (R^2) and multiple correlations (R) show that it is possible to explain the variance of student's satisfaction with studies 24% by the influence of satisfaction with informal communication and communication with the teaching staff and that their correlation is 0.49. When comparing the influence of independent variables individually, satisfaction with informal communication does not have statistically

significant impact on satisfaction with studies and communication with teaching staff have statistically significant impact on student's satisfaction. The values of Beta coefficient (0.07) and t - value (1,475) for satisfaction with informal communication are not statistically significant at the level of 0.01.

The values of Beta coefficient (0,44) and t - value (9,312) for satisfaction with communication with the teaching sty are statistically significant at the level of 0.01.

Table 8. Relation of students' satisfaction with informal communication and communication with the teaching staff and their overall satisfaction

R=0,49 R^2=0,24 F - relation=80,001			Sig. F=0,000	
	Beta	Part	t-value	p
Student's satisfaction with informal communication	0,07	0,06	1,475	0,141
Students' satisfaction with communication with the teaching staff	0,44	0,36	9,312	0,000

4.6. Logistical regression on the probability that students would recommend the faculty to others

Logistical regression was conducted to assess the impact of three factors on the likelihood that respondents would recommend the faculty to others. The model contains three independent variables (satisfaction with informal communication, satisfaction with communication with the teaching staff and type of faculty). The whole model is statistically significant $\chi2$ (3, N=516)=38,38, p=0,000, which shows that the model distinguishes respondents who did and also those who did not respond that they would recommend the faculty to others. The model as a whole explains between 7,2% (Cox and Snell R square) and 11,6% (Nagelkerke R square) variance in the choice of the same faculty and accurately classifies 82,4% cases.

As shown in the Table 9., two independent variables (satisfaction with informal communication and satisfaction with communication with teaching staff) have made a statistically significant contribution to the model. Satisfaction with informal communication has probability quotient 1,45. This shows that respondents who are more satisfied with informal communication, respond 1,49 times more often that they would recommand faculty to others, with all the other factors in the model equal. Probability quotient of the satisfaction with communication with teaching staff is 1,33. This shows that respondents who are more satisfied with communication with the teaching staff respond 1,33 times more often that they would recommand faculty to others, with all the other factors in the model equal. Type of the faculty did not give a statistically significant contribution to the model.

Table 9. Predicting the likelihood that a student would recommand faculty to others

| | B | S.E. | Wald | df | Sig | Exp(B) | 95% C.I.for EXP(B) | |
							Lower	Upper
Satisfaction with informal communication	0,37	0,13	8,55	1	0,00	1,45	1,13	1,86
Satisfaction with communication with teaching staff	0,29	0,11	6,61	1	0,00	1,33	1.07	1,65
Type of faculty	0,11	0,24	0,20	1	0,65	1,11	0,70	1,78
Constant	-1,87	0,55	11,31	1	0.00	0,15		

5. Conclusion

The first focus of this paper was on analysis of the relationships among two dimensions of communication (informal communication and communication with the teaching staff) and students overall satisfaction with studies. The second focus was on assessing the impact of three factors (satisfaction with informal communication, satisfaction with communication with the teaching staff and type of the faculty) on the likelihood that respondents would respond in order to recommend the same faculty to others.

Results of the research conducted on students of the private and public sector faculties in Bosnia and Herzegovina showed that satisfaction with informal communication does not have statistically significant impact on overall sastisfaction which is also the answer to our first research question. Results revealed a significant and positive impact of students' satisfaction with communication with the teaching staff and overall satisfaction. Satisfaction with communication with the teaching staff uniquely explains 13% of the variance in the value of a variable overall satisfaction which is also the answer to our second research question. Logistical regression model with three independent variables (satisfaction with informal communication, satisfaction with communication with the teaching staff and type of the faculty) was statistically significant wich shows that model distinguishes respondents who did and also those who did not respond that they would recommend the faculty to others. Ssatisfaction with informal communication and satisfaction with communication with the teaching staff have made a statistically significant contribution to the model. Type of the faculty did not give a statistically significant contribution to the model. It is the answer to our third research question.

Economic circumstances in Bosnia and Herzegovina in the future could lead to even stronger competition among faculties in order to attract and retain students. Unemployment, slow economic growth, outflows of the population and a fall in birth rates will lead to a reduction in the number of students at faculties. In such an academic environment students have many options available to them. Students' satisfaction is one of the factor wich will result in their attraction, retention and in recommendations of that certain faculty to others. This paper analyzed only satisfaction with communication as a sources of satisfaction and dissatisfaction among students at the faculty. This could be considered as a limitation of

this study, but also as a recommendation for future researchs. Factors with influence on attraction and retention of students should be in detail studied.

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GOOD COMMUNICATION – THE ANTECEDENT OF ORGANIZATIONAL IDENTIFICATION AND JOB SATISFACTION

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Abstract

In this study, we investigate the relationships between supervisory communication and horizontal and informal communication on one hand and job satisfaction and organizational identification on the other using sample of 230 employees in BH companies. Besides, the relationship between job satisfaction and organizational identification is analyzed. Both supervisory communication and horizontal and informal communication are positively related to job satisfaction and organizational identification. Also, job satisfaction is positively related to organizational identification. With regard to communication media, there is a significant difference in the job satisfaction concerning the use of face-to-face or computer-mediated communication by supervisors. On the other hand, there is no significant difference in job satisfaction regarding face-to-face or computer-mediated communication in horizontal and informal communication.

1. Introduction

For the past 20 years, firms are facing increased challenges when it comes to the business environment. These business challenges are a result of the development of information

technology, market globalization, increased competition, unpredictable and turbulent markets and changes in social trends (Akkirman and Harris, 2005).

Communication is a crucial factor in the achievement of all organizational goals (Sadia et al., 2016; Ruck and Welch, 2012). The role of management in developing effective internal communication is critical, as well as to be able to assess internal communication (Ruck and Welch, 2012). Besides, the satisfaction of employees in communication is essential for organizational development and fulfillment of organizational goals (Sadia et al., 2016).

Schulze et al. (2017) emphasize that effective communication inevitably determine the prediction of some essential organizational results, like leadership, individual and team performance.

With the advancement of technology, traditional forms of interpersonal communication are changing significantly. New forms of communication are emerging, virtual teamwork and collaboration in the dispersed geographic area have added additional challenges for employees of a contemporary business environment (Schulze et al., 2017). The development of information technology has contributed to the change in many business operating aspects, including communication. CM communication has become overwhelming in today's workplace interactions.

Do face-to-face (FtF) and computer-mediated (CM) communication have the same impact on employees' job satisfaction? The current study addresses this question with the goal of contributing to i) a deeper understanding of the relationships between communication and job satisfaction and organizational identification among employees, and ii) a more detailed understanding of the relationship between the type of communication (FtF and CM) and employees' job satisfaction.

2. Literature review

2.1. Organizational communication

The role of communication is an essential factor in understanding the value of intangible organizational assets, primarily the generation of social and communication capital (Ruck and Welch, 2012).

Vertical communication helps in achieving the organizational strategy and goals. Vertical communication represents a top-down and bottom-up communication. Top-down communication is the communication type where different management levels inform employees about organizational strategy, mission, and goals, as well as their expectations regarding employees working activities. Bottom-up communication represents the ability for employees to participate in decision-making (Bartels *et al.*, 2010). Supervisory communication involves communication with superiors.

Horizontal communication refers to formal and informal communication that takes place among people who are at the same hierarchy regarding organizational levels. Formal communication refers to task-related communication. On the other hand, informal communication involves communication between employees on privacy issues that are not particularly important for the performance of tasks (Bartels *et al.*, 2010).

2.2. Job satisfaction

Job satisfaction is the degree to which people like their jobs (Chiva and Alegre, 2009) or "*an employee's affective reactions to a job based on a comparison of desired outcomes and actual outcomes*" (Chiva and Alegre, 2008).

Authors of previous studies have been studying a lot of job satisfaction for a number of reasons. When employees are satisfied with the job, their behavior at the workplace will be directed towards achieving the goals of the company, which will affect the company's performance (Rowden, 2002). Job satisfaction is mainly influenced by working and organizational conditions (Chiva and Alegre, 2008).

2.3. Organizational identification

Bartels *et al. (2010)* define organizational identification as "*the perception of oneness with or belongingness to an organization, where the individual defines him or herself in terms of the organization(s) in which he or she is a member*". When employees identify themselves with their organization, this results in an increase in job satisfaction (Bartels *et al.*, 2010). They see themselves as being at one with the organization, and they make no differentiation between their own and organizational activities (De Ridder, 2004).

Edwards (2005) states that OI is a crucial psychological condition that reflects the relationship between employee and organization and therefore potentially can explain and predict many important attitudes and behaviors in the workplace.

OI increases the likelihood that an employee will remain in the organization and perform work activities following the strategic interests of the organization (Edwards, 2005; Van Dick *et al.*, 2005). One of the dominant approaches to OI in literature is the social identity theory (SIT) that suggests that individuals identify themselves with a particular group by personal or social identities. In other words, people tend to categorize the human race into specific social groups, and then assign themselves to one of the groups (Edwards, 2005).

3. Theory and hypotheses development

Schulze *et al.* (2017) list several theories in the area of CM communication:

- Media richness theory determines communication along the continuum of richness. FtF communication is the highest in richness, while textual communication is much lower in the hierarchy. The reason for this is that FtF communication potentially includes the body language and facial expression.
- Media naturalness theory presumes that FtF communication is the evolutionary oldest mode of interaction and that it is perceived as the most natural way of communication, as it permits the transmission of facial expressions and the observation of the body language.
- Electronic propinquity theory recognizes the reduced bandwidth of CM communication and assumes that these channel constraints create a diminished sense

of proximity to the communicators.

- Social information processing theory emphasizes the shortcomings of CM communication. However, this theory holds that individuals can use specific proxies, such as smileys, to supplement CM communication.

Carrière and Bourque (2009) note that the relationship between communication and job satisfaction is positive, i.e., employees reporting higher levels of communication satisfaction tend to be more satisfied with their jobs. The most initial research was focused on the relationship between supervisory communication and job satisfaction. However, horizontal communication has been confirmed as a significant antecedent of job satisfaction (Carrière and Bourque, 2009). Therefore, we propose the following hypotheses:

H1. Satisfaction with supervisory communication is positively related to job satisfaction.
H2. Satisfaction with horizontal and informal communication is positively related to job satisfaction.

Earlier studies proposed and empirically proved that higher levels of organizational communication lead to higher levels of organizational identification (Smidts, Pruyn and Van Riel, 2001). Based on the findings from previous research the following research hypotheses were proposed:

H3. Satisfaction with supervisory communication is positively related to organizational identification.
H4. Satisfaction with horizontal and informal communication is positively related to organizational identification.

Organizational identification positively influences job satisfaction because employees with a strong organizational identity perceive their job as proof of their organizational membership (Van Dick *et al.*, 2004). The stronger an employees' identification with their organization, the more likely it is that they will act in accordance with the organization's expectations (Karanika-murray *et al.*, 2015). Thus, we propose the following hypothesis:

H5. Organizational identification is positively related to job satisfaction.

Compared to face-to-face interaction, computer-mediated communication reduces a social context such as non-verbal information and status signals. Accordingly, participants are more anonymous and more focused on themselves and less on others (Wilson, Straus and McEvily, 2006). Consequently, it can lead to differences in the perception of communication and satisfaction with it concerning FtF and CM communication. Accordingly, we suggest the following hypotheses:

H6. There is a significant difference in the job satisfaction with regard to FtF or CM communication with supervisors.

H7. There is a significant difference in the job satisfaction with regard to FtF or CM communication with other employees.

4. Research methodology

To test the hypotheses, a questionnaire survey method using LimeSurvey was used to collect the responses of employees working in Bosnia and Herzegovina. Convenience and snowball sampling methods (Berg, 1988) are used and by using the authors' existing contacts, where participants suggest additional people for the study. A total of 230 questionnaires were used for the analysis.

4.1. Sample

Questions regarding demographic data were part of the questionnaire. 32.64 years are the average age of respondents which consists of female and male both in the ratio of 59.56 and 37.83 percent respectively.

Table 1. Sample characteristics

Respondents characteristics	Number	Percentage
I. Gender		
Female	137	59.56
Male	87	37.83
n/a	6	2.61
II. Education		
Primary education	1	0.43
SSS	61	26.52
VSS	109	47.40
Master	54	23.48
PhD	3	1.30
n/a	2	0.87
III. Working experience		
up to 1 year	6	2.61
from 1 to 3 years	65	28.27
from 3 to 5 years	26	11.30
from 5 t 10	50	21.74
from 10 to 15	40	17.39
15 and more	42	18.26
n/a	1	0.43

4.2. Research instrument

We have used parts of the Communication Satisfaction Questionnaire (CSQ) developed by Downs and Hazen (1977) that are still successfully used (Ruck and Welch, 2012). However, as Ruck and Welch (2012) stated, most of the studies analyzed this issue from the perspective of management rather than the employee. Thus, the items are adopted from

Deconinck *et al.* (2008). However, we analyzed the constructs of interest: supervisory communication, and horizontal and informal communication (co-worker communication).

The measurement model for job satisfaction (JS) is adopted from Deconinck *et al.* (2008). To measure organizational identification (OI), we adopted the measurement model by Smidts, Pruyn and Van Riel (2001) and Mael, Ashforth and Asiforth (1992). It is a reflective first-order model that consists of five items.

Table 2. Constructs' items

Construct/Item	Standard. factor loading	t-value	α
I. *Supervisory communication*			
Upper management listens and pays attention to me.	0.771	-	
My supervisor offers guidance for solving job-related problems	0.839	13.43	
My supervisor trusts me	0.783	12.392	0.905
My supervisor is open to ideas.	0.881	14.180	
I receive on-time information needed to do my job.	0.779	12.309	
II Horizontal and informal communication			
Conflicts are handled appropriately through proper communication channels.	0.886	-	0.898
My work group is compatible	0.834	15.975	
Informal communication is active and accurate.	0.836	16.030	
Communication with employees in other department is accurate and free-flowing.	0.767	13.993	
III Job satisfaction			
I find real enjoyment in my job.	0.919	-	
I find real enjoyment in my job.	0.896	22.324	0,927
I find real enjoyment in my job.	0.914	23.593	
I feel fairly well satisfied with my job.	0.945	26.092	
IV. Organizational identification			
I experience a strong sense of belonging to my company.	0.799	-	
I am very interested in what others think about my company.	0.834	14.531	
When I talk about my company, I usually say"WE" rather than "THEY".	0.852	14.96	0,932
My company's successes are my successes.	0.868	15.363	
When someone praises my company, it feels like a personal compliment.	0.934	17.012	
V Media for supervisory communication			
When communicating with employees, managers use face-to-face communication more often, i.e. conversation.			
VI Media for horizontal and informal communication			
When communicating with each other, employees use face-to-face communication more often, i.e. conversation.			

5. Data analysis and research findings

Data collected by the questionnaire survey were analyzed in several steps. First, reliability and validity analysis was conducted where data were checked using confirmatory factor analysis (CFA) and the fit indices proposed by Hair *et al.* (2010): χ2, root-mean-square-error (RMSEA), normed-fit index (NFI), and comparative-fit index (CFI). Second, structural equations model fit and hypotheses testing were tested using structural equation modeling (SEM) approach.

Table 3. CFA results for the measurement models

Dimensions	X^2/df	*RMSEA*	*CR*	*AVE*
Supervisory communication (SC)	2.37	0.0774	0.906	0.659
Horizontal and informal communication (HIC)	0.90	0.0	0.900	0.692
Job satisfaction (JS)	1.92	0.0636	0.953	0.803
Organizational identification (OI)	1.42	0.0427	0.933	0.737

5.1. Model fit and hypotheses testing

Structural equation modeling (SEM) was performed to evaluate proposed conceptual model and hypotheses about the relationships between satisfaction with communication at one hand and job satisfaction and organizational identification at other, as well as the relationship between job satisfaction and organizational identification (H1 to H5). Linear regression analysis was performed to test the hypotheses that there is a significant difference in the job satisfaction with regard to FtF or CM supervisory communication and communication with other employees (H6 and H7). The results of this analysis are presented in Table 5.

Table 4. Conceptual model fit

Estimate	Model estimated	Explanation
Chi-square	325.617	
df	129	
χ2/df	2.52	Very good, close to 2, <5
RMSEA	0.0816	<0,05 good fit; <0,08 acceptable fit;
		<0,1 mediocre fit
SRMR	0.0395	Very good, <0,08
NFI	0.977	Very good, >0,95
CFI	0.986	Very good, >0,90

Table 5. Hypotheses testing

	Dependent variable	Independent variable	Path coefficient	t – value	p-value
	Model				
H1	Job satisfaction	← Supervisory communication	0.223	1.489	0.069*
H2	Job satisfaction	← Horiz. and informal comm.	0.372	2.411	0.008*
H3	Organizational identification	← Supervisory communication	0.397	2.371	0.009*
H4	Organizational identification	← Horiz. and informal comm.	0.465	2.769	0.003*
H5	Job satisfaction	← Organizational identification	0.322	3.929	0.000*
	Communication media impact				
H6	Job satisfaction	← Communication media in SC	-0.151	-1.790	0.075**
H7	Job satisfaction	← Communication media in HIC	0.068	0.807	0.421**

*One-tailed; **Two-tailed

Proposed model fits the data well. Satisfaction with both supervisory and horizontal and informal communication positively impact job satisfaction and organizational identification. In other words, employees who are satisfied with the company's communication system will have a higher level of job satisfaction, but also identification with the organization. In addition, organizational identification also enhances job satisfaction.

The regression coefficients for supervisory communication was significant (β=-0.151, t=-1.790, p<0.1). Thus, communication media impact the satisfaction with the supervisory communication. However, communication media has no impact on the satisfaction with the horizontal and informal communication (β=0.068, t=0.807, p>0.1).

Table 6. Conclusion on hypotheses testing

Hypothesis	Result
H1. Satisfaction with supervisory communication is positively related to job satisfaction.	Accepted
H2. Satisfaction with horizontal and informal communication is positively related to job satisfaction.	Accepted
H3. Satisfaction with supervisory communication is positively related to organizational identification.	Accepted
H4. Satisfaction with horizontal and informal communication is positively related to organizational identification.	Accepted
H5. Job satisfaction is positively related to organizational identification.	Accepted
H6. There is a significant difference in the job satisfaction with regard to FtF and CM communication with supervisors.	Accepted
H7. There is a significant difference in the job satisfaction with regard to FtF and CM	Rejected

6. Conclusion, limitations and recommendations

It was hypothesized that employees who a higher level of satisfaction with both supervisory and horizontal and informal communication will be more satisfied with their work and have higher levels of organizational identification. The proposed conceptual model consisted of five hypotheses is confirmed. Results showed that satisfaction with both supervisory and horizontal and informal communication has a strong and positive effect on job satisfaction and organizational identification and corroborates the findings of Carrière and Bourque (2009). Besides, organizational identification has a strong and positive effect on job satisfaction and corroborates the findings of Karanika-murray *et al.* (2015).

Expanding on this, the effect of both supervisory and horizontal and informal communication on job satisfaction considering the used media, i.e., face-to-face or computer- mediated communication is analyzed. The results showed that there is a significant difference in job satisfaction with regard FtF or CM supervisory communication showing that FtF is the preferable type. However, when it comes to horizontal and informal communication, there is no significant difference in job satisfaction whether FtF or CM communication is used.

Internal communication systems that succeed in resulting in employee identification will have a positive impact on the job satisfaction.

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LIFE AFTER SCRUM – WHERE NEXT IN FRAMEWORK DEVELOPMENT

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Abstract
For decades the standardization of the model used to develop an information solution remains an important question for professional. Application of standardized methods and techniques introduces "order" in the development process. At the same time, this often leads to "rigid" understanding of the methodology and suboptimal end result. Although we have had both structured and agile methods in use for number of decades, today we still have a number of development models. Often, the debate is either advocating for the development of new all-inclusive framework or defending irreplaceability of some despite the overwhelming evidence of difficulties in providing solutions for long/term or complex information systems products. Still, we are more focused on overall information solution development process, and less on the framework. Putting overall development processes in forefront of any new framework discussion should be one of the guiding principles and focusing on processes has lead companies towards efficient build and deployment process, as the same time making sure that continuous integration and delivery are paramount to flexible and high quality software development. We should be more focused on overall information solution development process. The result should be a platform, a different approach to information solution development – not a new framework. Finally, the intention of this paper is not to provide the overview or the critique of Scrum, nor it intends to discuss Agile methods in general. Our intention is to address some of the practical limitations and suitability of Scrum methodology in today development requirements. Also, we would like to complement anticipated debate and to emphasize some of the open questions in software development processes.

Keywords: agile method, system development, software development framework

JEL classification: M15, O33

1. Introduction

Standardization of the model used to develop an information solution/system/application is an important question. The application of standardized development methods, techniques, and tools introduces "order" in the development process and structures it, thus making it more subject to control and more efficient. However, on the other hand, standardization could produce too "rigid" understanding of the methodology under which parts of the system develop. Traditional methods and development models for information systems often suffer from such problem while the standard becomes the meaning for itself.

On the other hand, the approaches that differ from the traditional structured approach have been existing for a long time, so although the life cycle model itself finds its place in the new methods – at least in the methodological sense – today there are a number of new, mainly "agile" development models for information systems. Ultimately, all approaches are more or less oriented toward improving the development process in terms of obtaining a better final product and optimizing efforts and costs invested in the development.

The intention of this paper is not to provide the comprehensive overview or the critique of agile approach or Scrum, nor does it intend to discuss advantages of agile methods in general. Though short overview of agile methods, as well as Scrum as most commonly used, we would like to address some of the practical limitations and suitability of any software development methodology. Also, we would like to complement ongoing debate on the need for new software development framework, and to emphasize some of the open questions present in day-to-day software development processes.

2. Agile software development methods

Agile software development constitutes a new approach to the IT project planning and management (Moe et al., 2008). Among different agile methods, the most known are Dynamic Systems Development Method (DSDM), Feature-Driven Development (FDD), Extreme Programming (XP), Crystal, Adaptive Software Development (ASD), and Scrum (Chow & Cao, 2008; Sverrisdottir et al., 2014; El Hameed et al., 2016).

The concept "agile development" refers to many different approaches, methods, or techniques intended for various problem situations and not necessarily originated because of a common influence or any kind of collaboration.

Following the approach given by Abrahamsson et al. (2002.), Sabic & Zaimovic (2009) list the main characteristics of different agile methods without further elaborating the components of each method. The goal of this review is to point to the essential characteristics of agile methods and the trend of unifying a series of good practices into the Scrum method – the most popular agile method today (Versione, 2017).

Understanding agile methods that are used today implies overall framework development evolution and how the most popular frameworks today are actually combination of trails/errors and best practices of software development over the past decades. In this paper we will review selected agile methods individually and their key characteristics.

Dynamic Systems Development Method (DSDM) represents a framework for rapid application development (RAD). After it emerged in mid-1990s, DSDM has gradually become the most accepted framework for RAD in Great Britain (Agile Business Consortium, 2014; Beynon-Davies & Williams, 2002; Boehm & Turner, 2003; Stapleton, 1997). The fundamental idea

behind DSDM is that instead of fixing the amount of functionality in a system, and then adjusting time and resources to reach that functionality, it is preferred to fix time and resources, and then adjust the amount of functionality accordingly (Abrahamsson et al., 2002).

Based on own researches of iterative development methods, James A. Highsmith III has developed and published the Adaptive Software Development (ASD) (Highsmith, 2000). ASD focuses on the problems in developing large and complex systems. Essentially, ASD is "balancing on the edge of chaos" because it tries to provide a framework to prevent a project from falling into the state of chaos but at the same time to minimize it to prevent the flexibility of response to changes and creativity (Abrahamsson et al., 2002; Boehm & Turner, 2003).

Extreme Programming appeared as a result of simple efforts to complete the programming/application development successfully while attempting to shorten the traditional software development process (Beck, 2000). The practitioners have simply tried to push ordinary development practices to the extreme (Beck, 2000; Ellis, 2016). The idea is that there is not a single process suitable for all situations but that a set of available principles and techniques has to be adapted to each specific situation.

Crystal family method is a set of methods that are more or less applicable to some specific development situations (Boehm & Turner, 2003). The most appropriate method is taken for the given situation and adapted additionally to respond to the situation challenges. Cockburn (2002), the concept author, associates different colors with each method to emphasize their adequacy for individual typical development situations under the principle "the darker the color, the more 'difficult' the method" (Boehm & Turner, 2003). Crystal methods are essentially based on the incremental development with direct cooperation and communication as one of major principles, which is at the same time their limitation.

Feature Driven Development (FDD) is an adaptive approach to system development. Although it covers the entire life cycle, it is mostly focused on the phases of software design and construction (Palmer and Felsing, 2002; Boehm & Turner, 2003). FDD is based on a frequent delivery of a smaller amount of products with emphasis on the quality and monitoring of the project progress. FDD requires the simultaneous use of as many "best experiences" as possible in a way that none of them dominate the development process. Many authors recommend FDD benefits for the development of "business critical" systems.

The Rational Unified Process (RUP) is a refined generic framework called Unified Process (UP). The Unified Process is an interactive and incremental software development process (Kendall, 2001). According to the UP, the system is being developed in four phases: Inception, Elaboration, Construction, and Transition, which are further broken down into time-limited iterations (Pilemalm et al., 2007). The important thing is that the UP includes in every phase all types of tasks related to system development (defining requirements, design, implementation, testing, and project management), in which the relative effort and focus on different tasks changes from phase to phase (Kendall, 2001). The RUP is based on the iterative approach for object-oriented systems and is inseparably connected with the use case technique of defining requirements (Cooper et al., 2006).

It has become an often practice in agile approach to software development to visualize the project progress and make it available by posting it on a wall in the form of a board with tasks. Kanban literally means "visual card", "blackboard", or "billboard" (Ahmad et al., 2017). Kanban is based on three main principles: (i) visualize what you do today (the flow of work): seeing all items in the context of each other can be very informative, (ii) limit the amount of work in progress (WIP limits): this helps balancing the approach based on flows, so the teams do not begin at the same

time and with too much work at the same time, and (iii) improving the flow: when a work item is finished, the next work item off the top of the comes to play (Ahmad et al., 2017; Dagli, 2012; Nikitina et al., 2012).

The fundamental idea is to use visual signals to synchronize the flow of work with process capacity, limit the waste of work interruption, minimize excess inventory or delay due to shortage, prevent unnecessary rework, and provide a means of tracking work progress (Dagli, 2012). Annual 'State of Agile' reports show that the use of Kanban increased from 31% to 39% in 2015 and from 39% to 50% in 2016 (VersionOne, 2015, 2016).

Lean Software Development (LSD) is a methodology inspired by the production system in the Japanese car manufacturers Toyota and Honda. Lean is a collection of operational techniques focused on productive use of resources (Soltan & Mostafa, 2015). Balle (2005) states that the development time in Toyota is twice shorter with the workers' productivity four times higher and with a considerably less percentage of errors than in the U.S. factories. This is achieved through: maximal elimination of waste in the production process; avoidance of waiting, i.e. achieving the constant flow from order to delivery, production on demand, maximal delay of irreversible decisions until the necessary information are collected, and authorizing production staff for decision making. LSD has seven principles: elimination of everything unnecessary, enhanced learning, decision making as late as possible, delivery as quick as possible, team strengthening, integrity building, and overviewing the whole (Milosavljevic, 2010).

According to the State of Agile annual report, 94% of the surveyed organizations confirmed that they use agile methods, 58% of which use the Scrum method (Versione, 2017). According to Schwaber and Beedle (2002), the term "Scrum" in methodological context was first used in a presentation of a Japanese adaptive, rapid, and self-organizing process of product development (Takeuchi & Nonaka, 1986). Scrum is an empirical approach that applies to the system development the ideas from the theory of control of industrial processes with emphasis on flexibility, adaptability, and productivity. It does not define any particular software development techniques for the implementation phase but concentrates more on how the team members should act to flexibly produce a system in a constantly changing environment (Sabic & Zaimovic, 2009; Lei et al., 2015).

Within Scrum, software development is a task of a self-managing team performed through so-called sprints (Moe et al., 2008). Within a sprint, four formal events are prescribed for inspection and adaptation (Ellis, 2016; Schwaber & Sutherland, 2013, 2017): Sprint Planning, Daily Scrum (or briefing), Sprint Review, and Sprint Retrospective. The Scrum Team consists of a Product Owner, the Development Team, and a Scrum Master (Moe, Dingsøyr & Dybå, 2008; Rubin, 2012; Bach- Dąbrowska & Pawlewski, 2014; Dönmez & Gudela, 2017; Overeem, 2016;). The Scrum Master ensures that the team members adhere to agile values, principles, and rules (Noll et al., 2017). In addition, the Scrum Master is tasked with coordinating meetings and removing any impediments encountered by the team during its work (Mundra et al., 2013). The Product Owner represents a client and instructs the self-managing team what will be produced and in which order (Sverrisdottir et al., 2014). Self-managing teams are groups of individuals that self-manage the work tasks (Monteiro et al., 2011). The common focus, mutual trust and respect, and the ability to quickly adapt to new challenges are the most important characteristics of the self-managing teams (Cockburn & Highsmith, 2001).

Because it relies on the direct communication and adaptation as one goes, Scrum can be efficiently applied within small, 5–9 member teams (Schwaber & Beedle, 2002; Mundra et al., 2013). In the event of a larger project that requires a bigger team, several small teams need to be

established, each of which uses Scrum, while the team leaders must meet regularly to agree on the activities. This way of the team organization is called the Scrum of Scrums.

3. Hybrid methods

Every project has different needs. For those finding themselves in a mostly plan-driven environment, a hybrid approach can be a transition to more adaptability and delivery. For those already delivering and adapting aggressively, blending in some new techniques can raise your bar even higher (Agile Alliance).

Scrum and eXtreme Programming (XP) were the first generation of Agile approaches and Kanban was the second generation. Each of these are consistent with subsets of Lean-Thinking; each emphasizes different Lean principles and each manifests Lean to different degrees (Net Objectives White Paper: An Introduction to Leanban). In text below we will define and explain some of most popular hybrid agile methods.

A new approach called Leanban uses Lean thinking as a guide to incorporate the best of Scrum and Kanban into Agile software development practices (Shalloway, 2016). Leanban was designed both to improve current Scrum and Kanban teams as well as to provide the most effective team-level Agile approach for those just adopting Agile. Leanban roles are Product Owner, Team Agility Master and Development Team (Net Objectives, 2016; Shalloway & Trott, 2016).

Borrowing from Scrum, Kanban, and XP, Leanban prescribes these core practices: small batches, self-organizing teams, daily stand-ups, focus on completion of work items not starting new ones, make all work visible, include management in what the team is doing and make all workflow rules explicit (Net Objectives White Paper: An Introduction to Leanban; Scrum to Leanban: Leanban Practices).

Scrumban combines two Agile approaches (Scrum and Kanban) to create a management framework for improving software engineering practices (Banijamali et al., 2017). Scrumban is a simplified version of Scrum, keeping the daily Scrum meeting and the Kanban board, but eliminating the planning activities and velocity measurement (Ellis, 2016). Scrumban focuses on smooth flow and minimizing WIP. Scrumban is oriented toward simpler projects. Scrumban incorporates the iterative planning of Scrum but is more responsive and adaptive to changes in user requirements (Banijamali et al., 2016).

4. Where next …

Often defined as a process framework for product development, consisting of a minimal set of immutable roles, artifacts, and events, usually accompanied by constraints, Scrum has been the most used information solution development model. But, as many have noted – it is barely a process, only a framework. Companies still have to provide all the development, management, product management, and people practices. Scrum only provides a framed-environment within companies can successfully manage complex development. It provides short-time tailored titled-boxes that allow teams to focus on one aspect of a complex problem at a time so that risk can be managed.

Still, most within the professional community already hint at the need-driven possibility of a new system development framework. Even one of the Scrum founders, Ken Schwaber, five years ago in his article "What comes after Scrum?" listed four key principles that will be necessary for any

framework to replace Scrum: (i) self-organization, (ii) bottom-up intelligence, (iii) empiricism, as well as (iv) transparency. A quick look at each one of them.

Understating the concept of self-organization has been a subject for many decades with authors broadly on opposite side of the discussion. Complex work usually involves people that are best capable of managing themselves. Still, it has to include management of the processes they use. So we are faced with conceptual dilemma. Creating a framework which facilitates team self-organization but also provides a mechanics for process management has proved to be a formidable challenge. At the same time, understanding that there is no difference between the practices defining a framework and the practices inside the framework should be a guiding principle. Putting a development processes in forefront of any new framework discussion should be one of the guiding principles and "self-organization" should be applied to the framework itself. Today, organizations have access to number of different good practices, from many sources, which they use to create their own custom-made processes - to make their own custom framework.

There is no point in hiring smart people only to tell them what to do, and most will agree that understating the importance of "bottom-up intelligence" can often be a key for success in many industries. This especially relates to creative workers who often make better decisions than managers. Accepting the premise that IT industry environment is unpredictable and dynamic, the developers will often make more coherent and better decision about the work they do then supervisors. It should be only up to the team to determine which processes will be best for the work that must be done. Still, a framework implies that some constraints and guidelines on the work processes have to exist. The assumption that might conflict with the principle of "bottom up intelligence". Also, by accepting the premise that everything changes all the time the evolution of the process framework will be forced to embrace a number of twists and turns – in the end looking more like the early system development model "start coding while I go and see what they want". In the end, as with the concept of self-organization, the development companies will have to deal primarily with the processes itself and less with the framework as such – to some extent living Scrum in void space of further upgrade.

The third notion of key principles necessary for any framework to replace Scrum is the "empiricism", i.e. emphasizing the role of empirical evidence in the formation of new framework. For a number of years, the systems analysts have been trying to define a software development framework, and still they often miss a key logic. The best prediction about the future are the ones derived from continuous evaluation of what they accomplished and then deciding what to do next. Same applies to information solutions/product. Instead of trying to anticipate which product features customers will need next, the focus should be on process framework. Instead of focusing on strictly define people's roles, artifacts, or events that team will need in the future – we should focus on work processes and by using iterations, feedback, and result data develop a tailored process framework that fits our organization and company profile.

Finally, there is a "transparency" – to make well founded decisions, you need good information. Similar to any successful project management lessons, in software solution development we have to secure access to data about the features, the artifacts, the work that is in progress, and the ideas that are still under evaluation to all involved. Today, many companies have managed to achieve this level of transparency in product development. Still, this should also be applied to frameworks, i.e. consumers should have information about results achieved with delivered processes, new processes in development or ideas for future processes.

In all, we have to accept that Scrum framework is itself just another product and we should in the end apply the Scrum principles to Scrum itself, i.e. we have to acknowledge that "framework has to stop being a static framework". It has to evolve to a dynamic ecosystem where all processes are operated by self-organizing teams, with comprehensive bottom-up approach subjected to empirical evidence, and with shared community sense.

Still, to achieve this we also have to understand that Agile approach, like most of system development models, was aimed at software development. But software development is only one side of IT solutions coin. Despite being the most visible and tangible, most professionals will agree that *"agile development"* without *"agile maintenance"* will produce suboptimal results. Often minimized role of operations employees in software developed results in longer feedback cycles. Companies which understand that the operations are an important stakeholder have starter involving them early in the development process. Also, since developers and testers have profound knowledge of the functionality they have developed, it's a logical step to involve them more and more in operations issues. This cooperation between development and operations has increased substantially over the past decade, i.e. developers, testers and operations are operating as team responsible for software development and software maintenance.

Focusing on processes, not on the framework, has led to the increased application of DevOps approach in many companies. Securing intense ability to deploy products, high availability in production, rigorous testing process, up-to-date version control as well as configuration management – is now a business paradigm for majority of IT companies. Integrating development with operations provides companies with efficient build and deployment process, making sure that continuous integration and delivery are paramount to flexible and high quality software development.

Even though DevOps brings a lot to the table, it is still an improvement that relates much more to the overall Application Lifecycle Management, than to boosting the Scrum process itself, or being an attempt to rectify some of its most apparent deficiencies. The Scrum itself made a significant role in improving the way we were building the software 10 or more years ago, but if we want to move forward, as we always do, we need to clearly outline its disadvantages and then to make a plan on how to improve it.

For that matter, the sound approach would be if we now briefly move on to the practical aspect of Scrum and where it falls short in a real life of software development, where we may assert that there are some of the painful disadvantages that could not be foreseen at the very beginning when agile methodology was in its inception, but were sort of distilled over the time we learned how to use Scrum and implement it with real projects. Let us try to mention some of the most important shortcomings of the Scrum methodology that creep up in the practice, since knowing that can trigger the search for correcting those issues and updating the Scrum and Agile approach in overall in order to improve it:

Reduced long vision: when using Scrum, teams usually plan for the duration of the sprint (usually 2 weeks), and are focused on delivering a fully running version of the software by the end of the sprint, that has the functionality that the product owner has request. It is very hard to see 8 month in the future, and this is discouraged by design in the Scrum. At most, the architects and Project Managers will plan for features that are just a grouping of certain product backlog items that represent a certain well-rounded functionality that makes sense to the product owner who mostly sees the business side of what he is looking to get, so it may as well span over several sprint, but certainly not 8 month or more. For this matter, some companies that produce larger projects are mixing the waterfall with Scrum, which is unfortunate and show one clear point of possible

improvement in the Scrum methodology. It is also clear that because of this, the client cannot easily estimate how much money and effort will be required to complete some projects, especially if the project is of medium or bigger size.

Less predictable: with reduced time for planning and gathering requirements, since Scrum does not prescribe that all requirements have to be very detailed and never changing, but quite the opposite in order to foster the agility, it is much harder to properly estimate the effort required to complete some work, and this presents a constant challenge that may adversely affect the whole sprint. There are always inconsistencies in the components of the system being built, hidden complexity that is very hard to foresee in the very beginning, and such.

Communication challenges: in order for Scrum to be effective, the communication is a paramount, as it solves most of the issues. This was not just by a chance and was also prescribed in the very beginning: "Individuals and interactions over processes and tools" (Agile Manifesto, 2001). This means that Scrum relies on having a team of individuals (Software Developers, QA, Project Managers, etc.) who are very good in communicating, and this is something that does not happen so often in a real life.

Client interaction: without a client who acts as a product owner, and who is knowledgeable and devoted to the Scrum process, it is often the case that the projects begin to suffer from the lack of information; too frequent changes of requirements and in the end start to slide off the track.

Meeting hangover: the process itself is poised to very easily ruin the rhythm of the development team, since there are too many meeting and ceremonies prescribed, and most of them are being implemented on a daily bases: daily scrums, sprint planning, sprint review, sprint retrospective, backlog grooming, sprint demos, other company meetings, trainings etc.

Balance: with many meetings and other activities, and also a constant need to communicate at various levels, the inevitable fact is that the productivity actually goes lower. In order to solve issues, something that blocks the team from working, and this has its roots in cutting down the time for planning in the very beginning, the need to have more meetings and communication arises and so the team falls into a vicious circle.

Finally, after pointing out some of the disadvantages of Scrum process, we may still confidently say that it has certainly been a huge improvement in comparison with what different development methodologies we had in the past, and it provided us with much healthier approach to software development which also yielded much better results. So it is clear that the software development companies did not make a mistake by adopting and introducing Scrum in their development process or going with various Agile methodologies, hence the way to go in the future would be to build on the foundations that Scrum and Agile Methodologies in overall have set forth. It is certainly not the case that we need to search for something altogether new and have a significant change of the direction, but we do need to recognize that there is a huge room for improvement.

Some of the tangible improvement paths should be geared toward pursuing making the improvements on the points laid out above when we talked about the disadvantages of the Scrum methodology.

In the conclusion, we should be more focused on overall information solution development process, and less on the framework. It seems that we are missing the key point in managing any product development – reliably delivering high quality solutions on time. Instead of looking or advocating for the replacement of Scrum or on the other side its irreplaceability despite the overwhelming evidence of difficulties in providing solutions for long/term or complex information systems products – we should be looking more towards corporate-tailored solutions accepting the premise that as in any business the information solution consumers appreciate a

comprehensive approach. The result should be a platform, a different approach to information solution development – not a new framework.

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ACCEPTANCE OF CLOUD COMPUTING IN EDUCATION

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Abstract

The use of cloud computing today is ubiquitous. Lately, its application has gained significance in the education sector. In order to examine the reasons for its acceptance among the student population, a technology acceptance model was used and test were performed of the influence of subjective norm, computer self-efficacy, trust, software functionality and perceived practicality, in addition to the basic variables (perceived ease of use, perceived usefulness, intent to use and use). According to results of this research, the ease of use determinant has the most significant impact on the intent to use. Students will use cloud computing if they think that its use is effortless. Structural equation modelling is employed in order to offer an integrated model with interdependences and interrelations of the above-mentioned constructs.

Keywords: cloud computing, information technology, education, technology acceptance model

JEL classification: I21

1. Introduction

Cloud computing technology can be adopted in all areas of society. In terms of education, the e learning solutions based on the cloud promote a new era of learning, in which lectures and labs are based on a cloud platform through virtualization (Isăilă, 2014). On the other hand, various cloud services are available to students free of charge, and enable them to collaborate, share or store documents.

The cloud computing benefits are available both to educational institutions and to students. In terms of educational institutions, companies such as Microsoft and Google offer students and staff free emails, calendars and document storage. Users can also create and share documents such as spreadsheets and presentations, in addition to creating websites which can be accessed via the Web (Sclater, 2009).

Over the past decades, there have been many studies which analyze technology acceptance by users with a special focus on the technology acceptance in education (Alrawashdeh, 2011; Cheng, Wang, Yang, & Peng, 2011; Escobar-Rodríguez & Carvajal-Trujillo, 2014; Kim, Park, & Lee, 2007; Oliveira, Faria, Thomas, & Popovič, 2014; Oye, N.a, & Rabin, 2011). Studies treating initiators of cloud computing use by the student population, however, are rare. Therefore, the primary goal of this study is to evaluate students' opinions and beliefs in relation to the determinants of cloud computing application to education.

To the best of our knowledge, similar studies are very limited, especially in the SEE region. An empirical study was conducted among the student population. In total, 219 students took part in the study during the summer semester 2018. For the purpose of the analysis, we followed the two-step procedure suggested by (Anderson & Gerbing, 1988). We first examined the measurement model in order to test convergent and discriminant validity. The second step included testing of the structural model with the primary goal of testing the strength and direction of the relationships among theoretical constructs. Consequently, we defined two research questions:

1. What are the determinants of cloud computing acceptance in education?
2. Is it possible to recommend to universities, software companies and decision makers to accept cloud computing?

Additionaly, this study is intended to bridge the gap in the previous research of cloud computing by providing answers to the research questions as stated above.

2. Literature review and research model

Davis (1989) proposes a model which tests the users' acceptance and use, and thanks to its application and continuous upgrades it has become one of the most used theoretical models in the area of information and communications technology. Furthermore, the research which tests

technology acceptance is based on the following theories: Unified theory of acceptance and use of technology (UTAUT) (Venkatesh, 2000), Theory of planned behavior (TPB) (Ajzen, 1991), Theory of reasoned actions (TRA). The original TAM consisted of the following variables: perceived ease of use, perceived usefulness, attitude towards using, behavioral intention to use and actual use (Wu & Wang, 2005). The research model in this study is based on the technology acceptance model, and it has been expanded by the following constructs: subjective norm, computer self-efficacy, trust, software functionality and practicality, according to the study by (Bhatiasevi & Naglis, 2016).

In the TAM model, perceived usefulness (PU) is defined as a degree to which a person believes that the use of a system will improve their efficacy (Davis, 1989). The perceived ease of use (PEOU) is the degree to which a person believes that the use of a system will be effortless (Davis, 1989). The belief whether a system is easy to use or not, has a positive effect on the perceived usefulness of a system to a user, which has been demonstrated in many studies (Liao, Palvia, & Chen, 2009; Liu, Chen, Sun, Wible, & Kuo, 2010; Mohammadi, 2015).

Additional examination has been made in the model of the relationship between the perceived ease of use (PEOU) and the intent to use (ITU). The above-mentioned relationship has been proven in the research of online learning and education (Jairak, Praneetpolgrang, & Mekhabunchakij, 2009; Liu & Yuan, 2005; Oye et al., 2011). A positive effect has been confirmed by studies in relation to e banking and mobile banking (Luarn & Lin, 2005; Oliveira et al., 2014; Poon, 2007). In the context of our study, the user will be ready to use a cloud computing system if they believe that the use will be effortless.

The positive relationship between the perceived usefulness and the intent to use has been confirmed by the previous research (Hwang, Kuo, Chen, & Ho, 2014; Gribbins, 2007; Pousttchi & Wiedemann, 2007). The above-mentioned research served as a guideline for ours, where we assume that the perceived usefulness, i.e. the user's belief that the cloud computing will be useful in learning will contribute to their intent to use it. Based on the above, we proposed the following hypotheses:

H1: The perceived ease of use has a positive effect on the perceived usefulness of cloud computing.
H2: The perceived ease of use has a positive effect on the intent to use cloud computing.
H3: The perceived usefulness has a positive effect on the intent to use cloud computing.

The TAM model also assumes that the intent to use will contribute to the actual use of an IT system (Davis, 1989), which is why we consequently made the following hypothesis:
H4: The intent to use has a positive effect on cloud computing use.

The social influence, i.e. the support of the family, friends and colleagues may have a significant effect on the intent to use the system and its perceived usefulness. The reference literature mentions the construct of subjective norm, which is defined as the degree to which a person believes that people important to them think that a system should or should not be used (Fishbein & Ajzen, 1975). The positive relationship between the subjective norm and the

perceived usefulness was also found in the research (Kreijns, Van Acker, Vermeulen, & Van Buuren, 2013; Lee, 2010; Lee, Hsieh, & Ma, 2011; Park, 2009). In the context of our research, users will use cloud computing if they believe that people who are important to them think that they should use it.

H5: Social influence has a positive effect on the perceived usefulness of cloud computing.

The users appreciate the advantages offered by technology only if they believe that the technology makes their lives more efficient and that it eliminates difficulties in the execution of their tasks (Bhatiasevi & Naglis, 2016; Obe & Balogun, 2007). The reference literature defines perceived practicality as agility and availability of service which is flexible in terms of time and location (Okazaki, Skapa, & Grande, 2008). In the context of cloud computing, users will most likely be ready to use cloud computing if they believe that it is appropriate and that it makes their every day lives easier. An added reason to use the IT technology is the users' trust. Trust is defined as the users' expectation that individuals or companies with which they interact will not take advantage of their dependence (Gefen, Karahanna, & Straub, 2003). If a user trusts a system, i.e. believes a system to be safe to use, they will consider it useful (Abushanab, Michael Pearson, & Setterstrom, 2010; Gefen et al., 2003; Jarvenpaa, Tractinsky, & Saarinen, 1999; Wu & Chen, 2005). Based on the above, we defined the following hypotheses:

H6: The perceived practicality has a positive effect on the perceived usefulness.
H7: Trust has a positive effect on the perceived usefulness.

The remaining hypotheses refer to the technological component: the independent assessment of the ability to use a software and the functionality of the software. Self-efficacy is defined as the person's assessment of their ability to use a computer (Higgins & Compeau, 1995). Users will be more ready to use cloud computing if they believe that they will be able to use the system, which then will have a positive effect on the perceived usefulness and the ease of use. Finally, an important factor in estimating the speed of technology adoption is represented by the technological characteristics (Rogers, 2003). It is necessary to understand how a software works and how to coordinate it with the needs of end-users. The software functionality means the totality of basic functions offered by the software (Bhatiasevi & Naglis, 2016). In the context of our research, users will be ready to use cloud computing if they are certain that it is easy to use. Therefore, the following hypotheses were defined:

H8: The computer self-efficacy has a positive effect on the perceived usefulness.
H9: The computer self-efficacy has a positive effect on the perceived ease of use.
H10: The software functionality has a positive relationship with the perceived ease of use.

The proposed model and hypotheses are shown in Figure 1.

Figure 1 Proposed model
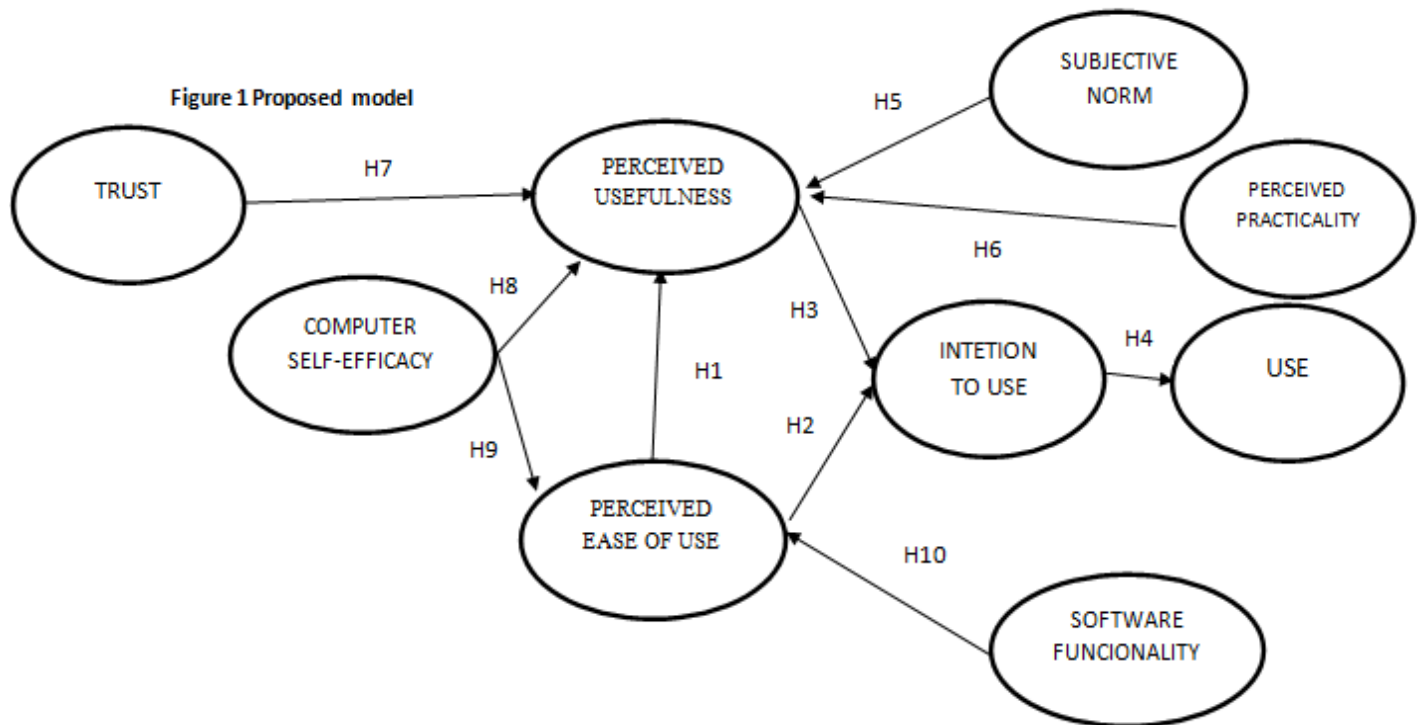
Source: Authors' illustration

3. Data analysis

The primary goal of this study was to evaluate students' attitudes and beliefs related to the determinants of using cloud computing for educational purposes. The identification of these characteristics as a valuable predictor of using cloud computing will have important practical implications as well as a contribution to increasing knowledge. For example, with the identification of these predictors, school managers, teachers and students may have a different approach to the further process of studying and learning. We employed the Lisrel 8.8. software tool to test the research hypotheses.

3.1 Instruments

The questionnaire used for the purpose of this paper had one-dimensional scales for the following constructs: perceived usefulness, perceived ease of use, intent to use, use, subjective norm, computer self-efficacy, trust, software functionality and practicality. Furthermore, the questionnaire consisted of two parts: demographic questions and questions related to the constructs of the above-mentioned research model. Each item corresponding to the constructs was measured using the seven-point Likert scale with choices ranging from "Strongly disagree" (1) to "Strongly agree" (7), adopted from the literature, with minor changes in wording regarding to the specific research context. The measurement scale for the proposed model was adopted

from the Bhatiasevi & Naglis (2016) and Davis (1989). The definitions of constructs analyzed in this paper are provided in the table below.

Table 14. Definitions of constructs and source of selected scales

Construct	Definition
Perceived usefulness	"Degree to which a person believes that the use of a system will improve their efficacy" (Davis, 1989).
Perceived ease of use	"Degree to which a person believes that the use of a system will be effortless" (Davis, 1989).
Intent to use	"defines the actual use of a given IS system and therefore determines technology acceptance" (Davis, 1989).
Subjective norm	"Degree to which a person believes people who are important to them think that a system should or should not be used" (Fishbein & Ajzen, 1975).
Perceived practicality	"Agility and availability of service which is flexible in terms of time and location" (Okazaki, Skapa, & Grande, 2008).
Trust	"User's expectation that individuals or companies with which they interact will not take advantage of their dependence" (Gefen, Karahanna, & Straub, 2003).
Computer self-efficacy	"Person's estimate of their ability to use a computer" (Higgins & Compeau, 1995).
Software functionality	"Totality of basic functions provided by a software" (Bhatiasevi & Naglis, 2016)

Source: Authors' illustration

3.2 Data collection and sample

The analysis was conducted on a target group of students who use cloud computing for educational purposes. More concretely, Dropbox and Google Docs were chosen as the most frequently used systems among the student population. The questionnaires were delivered online using Google forms tool to students at the end of the 2018 summer semester, from May to June 2018.

Out of 430 students who accessed the survey, 219 completed and usable questionnaires were returned, corresponding to the net response rate of approximately 51%. The research participants' age was 20-22 (30,30%) and more than 22 (51,10%). The majority of students attended 2nd and 3rd year of study (50,20%) at the School of Economics and Business of the University in Sarajevo. The duration of their use of cloud computing varies between 19 and 24 months (18,20%) and more than 24 months (40,90%). The most used system is Google Docs, used by 57,20% research participants. The described characteristics are shown in Table 2.

Table 15. Demographics characteristics of the respondents

Participants' characteristics	F	%
Gender		
Male	84	38,40
Female	135	61,60
Age		
18-19	41	18,60
20-22	67	30,30
22 and above	113	51,10
Department		
Management and information technologies	60	27,40
Marketing	42	19,20
Management and organization	44	20,10
Financial management	42	19,20
Accounting and audit	31	14,20
Year of study		
1st cycle, Year 1	20	9,10
1st cycle, Year 2	50	22,80
1st cycle, Year 3	58	26,50
2nd cycle, Year 1	39	17,80
2nd cycle, Year 2	52	23,70
Duration of using cloud computing (in months)		
Less than 6 months	36	16,40
6 -12 months	26	11,80
13 - 18 months	28	12,70
19 - 24 months	40	18,20
More than 24 months	90	40,90

Source: Authors' illustration

4. Analysis and results

For the analysis, we followed a two-step procedure suggested by Anderson & Gerbing (1988). At the beginning, we examined the measurement model in order to test convergent and discriminant validity. In the second step, we tested the structural model with the primary goal of testing the strength and direction of the relationships among theoretical constructs.

4.1 Analysis of the measurement models

The convergent validity shows the degree to which instrument items are related, assessed according to the Fornell & Larcker (1981) criteria, as follows:
1. All factor loadings (Alpha coefficient) should exceed 0.5;
2. Construct reliabilities (CR) should exceed 0.8;
3. Average variance extracted (AVE) should exceed 0.5.

The measurement model reliability was tested, as represented in Table 3. As the Table 3 shows, the Cronbach alpha values exceeded the recommended value of 0.5, which suggests good scale reliability (Hair, J.F., Black, W.C., Babin, B.J., Anderson, 2010). Additionally, all results of confirmatory factor analysis for all research variables are presented in Table 3 and they verify the theoretical measurement model.

Table 16. Results of convergent analysis

Dimensions	Code	Item	St. loadings	Mean	SD	Cronbach Alpha
Subjective norm	SN1	People who affect my behaviour believe that I should use Google Docs / Dropbox	0,914	4,7477	1,65848	0,879
	SN2	People who matter to me think that I should use Google Docs / Dropbox	0,930	4,8468	1,61553	
	SN3	Professor believes that I should use Google Docs / Dropbox	0,686	5,0586	1,50751	
Perceived practicality	PC1	Using Google Docs / Dropbox enables me to complete my tasks on time	0,721	5,2182	1,32335	0,843
	PC2	I can execute my tasks anywhere using Google Docs / Dropbox	0,783	5,3318	1,34602	
	PC3	Using Google Docs/ Dropbox makes it practical to execute my tasks	0,804	5,5273	1,19519	
	PC4	I consider Google Docs/ Dropbox practical	0,746	5,8545	1,08822	
Software functionality	SF1	Google Docs / Dropbox can deliver required tasks	0,738	5,3973	1,20099	0,798

	SF2	Results of using Google Docs / Dropbox are valid as expected	0,762	5,2283	1,17424	
	SF3	Google Docs/ Dropbox make it possible to work with other programs	0,777	5,2740	1,28070	
	SF4	Google Docs/ Dropbox prevents unauthorized access	0,777	5,2740	1,28070	
Trust	TR1	Google Docs / Dropbox is completely reliable	0,816	5,2127	1,31253	0,913
	TR2	My trust in Google Docs / Dropbox is high	0,841	5,2805	1,26959	
	TR3	I feel safe leaving my personal information on Google Docs/ Dropbox	0,845	5,1312	1,43842	
	TR4	I believe that Google Docs/ Dropbox has security settings for user protection	0,788	5,4434	1,15708	
	TR5	I trust Google Docs / Dropbox although I know very little of their security system	0,837	5,0407	1,34609	
Computer self-efficacy	CSE1	I could use Google Docs / Dropbox even if no one showed me how to use it	0,635	5,4266	1,28681	0,839
	CSE2	I could use Google Docs / Dropbox if someone helped me	0,842	5,7110	1,19676	
	CSE3	I could use Google Docs / Dropbox if someone showed me how to use it	0,811	5,6789	1,22479	
	CSE4	I could use Google Docs / Dropbox if I saw someone use it	0,780	5,6789	1,18657	
Perceived easy of use	PEOU1	It is easy to learn to use Google Docs / Dropbox	0,846	5,7123	1,16303	0,890
	PEOU2	Interacting with Google Docs / Dropbox is clear and easy to understand	0,804	5,6621	1,06443	
	PEOU3	It is easy to become proficient in using Google Docs / Dropbox	0,820	5,5845	1,19477	
	PEOU4	I believe that Google Docs / Dropbox is easy to use	0,836	5,7671	1,04733	
Perceived usefulness	PU1	Using Google Docs / Dropbox enables me to complete my tasks faster	0,832	5,5505	1,02040	0,827
	PU2	Using Google Docs / Dropbox provides me control over my tasks	0,782	5,4312	1,16688	
	PU3	Using Google Docs / Dropbox improves the quality of my work	0,712	5,5642	1,28730	
	PU4	I believe that Google Docs / Dropbox is very useful	0,702	6,0000	1,04286	

	ITU1	Assuming that I have access to Google Docs / Dropbox, I intend to use it	0,750	5,7727	1,10754	
	ITU2	If I has access to Google Docs / Dropbox, I would probably use it	0,836	5,6909	1,28387	0,894
	ITU3	I intend to use Google Docs / Dropbox whenever I need to	0,884	5,7955	1,17391	
Intention to use	ITU4	I intend to use Google Docs / Dropbox in future	0,842	5,8545	1,17692	
	UB1	How many times a week do you use Google Docs / Dropbox	0,944	4,7854	1,81345	
Use	UB2	How many hours per week do you use Google Docs / Dropbox	0,808	3,4475	1,78442	0,874
Chi-Square=941,09; df = 428; RMSEA = 0,074; CFI = 0.974						

Source: Authors' illustration

For the construct Subjective norm (SN), Cronbah α is 0,879, whereas its values for other constructs are the following: perceived practicality (PC) is 0,843, software functionality (SF) is 0,798, trust (TR) is 0,913, computer self-efficacy (CSE) is 0,839, perceived ease of use (PEOU) is 0.890, perceived usefulness (PU) is 0,827, intent to use (ITU) is 0,894, and the use (UB) is 0,874. The said values of Cronbach α suggest the reliability of scales applied in the research. Furthermore, standardized factor loading for all constructs are at a satisfactory level as recommended by (Hair, J.F., Black, W.C., Babin, B.J., Anderson, 2010).

We additionally tested the model suitability using empirical data by the following indicators: x²/df, RMSEA and CFI. In order for them to be satisfactory, it is necessary for the ratio x²/df to be less than 5, RMSEA indices less than 0,10, and the CFI higher than 0,90. From the table above, it is evident that our measurement model corresponds to the data gathered.

Moreover, we tested both the convergent and discriminatory validity of the proposed model, as represented by Table 4.

Table 4: Validity of measurement models

Dimensions	CR	AVE	ITU	SN	PC	SF	TR	CSE	PEOU	PU	UB
ITU	0,898	0,688	**0,829**								
SN	0,885	0,724	0,324	**0,851**							
PC	0,849	0,584	0,56	0,694	**0,764**						
DF	0,803	0,576	0,512	0,693	0,883	**0,759**					
T	0,91	0,68	0,48	0,61	0,64	0,81	**0,82**				

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	5	2	2	5	3	6	**6**				
CSE	0,853	0,595	0,647	0,482	0,664	0,487	0,531	**0,826**			
PEOU	0,861	0,674	0,777	0,517	0,74	0,672	0,66	0,842	**0,821**		
PU	0,820	0,604	0,667	0,526	0,731	0,851	0,686	0,605	0,834	**0,777**	
UB	0,882	0,715	0,538	0,445	0,445	0,462	0,485	0,446	0,45	0,482	**0,846**

Source: Author's illustration

In general, this model indicates that each measurement model has a strong internal reliability and that it is appropriate in comparison to all generally recommended standards. All our measures fulfilled the recommended levels of composite reliability and average variance extracted. The composite reliability (CR) and average variance extracted (AVE) for each construct is higher than 0,50 which suggests an acceptable scale validity (Fornell & Larcker, 1981). The standard loadings for each research variable are significant ($t>1.96$) (Anderson & Gerbing, 1988).

The discriminant validity may be achieved if the AVE square root of each construct exceeds the construct correlations. Table 4 shows the results of discriminant validity of latent variables based on square root of their respective average variance extracted (Fornell & Larcker, 1981). As the table shows, the square root of average variance extracted for most of the variables is greater than the off-diagonal correlations, suggesting satisfactory discriminant validity among variables.

4.2 Analysis of the structural model

In the second step, we tested the structural model with the primary goal of testing the strength and direction of the relationships among theoretical constructs. According to Schumacker & Lomax (2004), no single index can serve as the only standard for judging the quality of a model. We adopted and followed recommended indices and their respective values from Bentler (1989) and Hair et al. (2010) which we presented in Table 5.

Table 5. Results of fit indices for structural model

Goodness-of-fit measure	Recommended value*	Structural model
Chi square/degree of freedom	≤3.000	**2.260**
Comparative fit index (CFI)	≥0.900	**0.973**
Normed fit index (NFI)	≥0.900	**0.952**
Root mean square error of approximation (RMSEA)	≤0.100	**0.076**
SRMR	≤0.050	**0.072**

* Recommended values have been adopted from Hair et al. (2010) and Bentler (1989).

Source: Authors' illustration

Indices computed based on the analysis of the structural model prove the suitability of the model, and the acceptability of the overall model suitability (Chi-square = 1006,2000; Df = 444; x²/df = 2,26; CFI = 0,973; NFI =0,952; RMSEA = 0,0760; SRMR = 0,0725), as shown in Table 5.

4.3 Hypotheses testing

It is necessary to test individual estimates of parameters representing individual hypotheses (Hair et al., 2010). To examine the statistical significance of proposed causal relationships we applied a t-test. We have found, as Figure 3 and Table 6 show, that PEOU has a significant and positive effect on PU ($\beta=0.860$, $p<0.001$), that PEOU has a significant and positive effect on ITU ($\beta=0.730$, $p<0.001$), ITU has a significant and positive effect on UB ($\beta=0.550$, $p<0.001$). Also, PC and TR have a positive and significant influence on PU ($\beta=-0.350$, $p>0.001$; $\beta=-0.200$, $p>0.001$). Additionally, CSE has a positive and significant influence on PU and PEOU ($\beta=-0.430$, $p>0.001$; $\beta=-0.340$, $p>0.001$). And finally, SF has a positive significant influence on PEOU (($\beta=-0.420$, $p>0.001$). Hypotheses related to the positive impact of PU on ITU and SN on PU were not supported ($\beta=-0.060$, $p>0.05$; $\beta=-0.090$, $p>0.05$).

Table 17. Hypotheses testing

| Hypotheses	Standardized coefficient	t - value	Results
H1: PEOU → PU	0,860	6,03	Supported
H2: PEOU → ITU	0,730	5,52	Supported
H3: PU → ITU	0,060	0,51	Not supported
H4: ITU → UB	0,550	7,72	Supported
H5: SN → PU	0,090	1,20	Not supported
H6: PC → PU	0,350	3,08	Supported
H7: TR → PU	0,200	2,53	Supported
H8: CSE → PU	0,430	3,15	Supported
H9: CSE → PEOU	0,340	7,98	Supported
H10: SF → PEOU	0,420	5,53	Supported

*P < 0.05; ** p<0.01; *** p<0.001.

Source: Author's illustration

Path coefficients and their significance levels, with the hypotheses testing results, are shown by Figure 3, where eight out of ten hypotheses are supported. The model explains 82,50% of the perceived usefulness variance, 79,90% of the perceived ease of use variance, 61% of the

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intent to use variance and 30,20% of the use variance. The discussion related to results of our analysis is presented below.

Figure 1

Source: Author's illustration
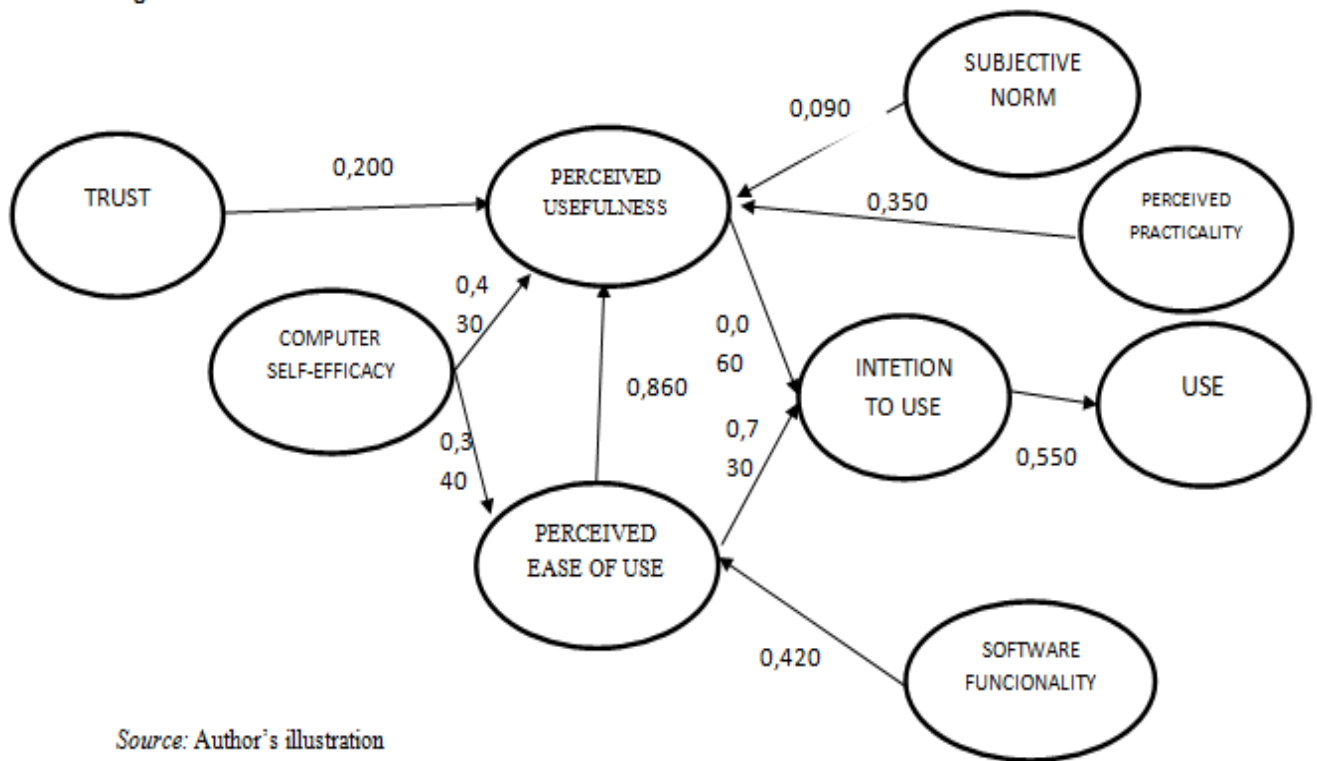
5. Results discussion and conclusion

The main goals of this paper were to determine factors and the degree of impact of each factor leading to accepting cloud computing, and to identify the most important factors in the population of students of the University in Sarajevo.

By analyzing the results, we have proved that the perception of the ease of use is very important for the intent to use, but also for the perception of usefulness. Concretely, this would mean that if students believe that using Dropbox or Google Docs is easy, simple and easy to understand, and if they have access to these systems, they will use it. Therefore, the ease of use is of great importance to students, and it has been proven to be most important predictor of the intent to use.

The intent to use is directly related to the actual use, as has been supported by previous research (Agudo-Peregrina, Angel Hernandez-Garcia & Pascual-Miguel, 2013; Davis, Bagozzi, & Warshaw, 1989; Wu, Tao, & Yang, 2007). The proposed hypothesis related to the positive relationship between perceived practicality and perceived usefulness is also supported, and in this study that means that, due to their lecture schedule, numerous tasks related to their studies,

students will choose a more flexible method of collaboration and cooperation with colleagues to finish their tasks. For a technology to be perceived as useful, we need to believe, among other, that it is safe and reliable to use. Students' perception of reliability and security while using cloud systems affects their opinion as to whether the technology will be useful to them. Accuracy, ability to interact with other programs and preventing unauthorized access also lead to a positive opinion on the system usefulness (Bhatiasevi & Naglis, 2016). Furthermore, students' opinions on their ability to use cloud computing without anyone's help is related to their belief that cloud computing is useful or easy to use. Moreover, the belief that the software functionalities are simple, and that the software is easy to use is an added motive to use it.

In our research we did not come across the validation of social influence, i.e. family and friends on the students' perception of usefulness, notwithstanding the fact that such relationship was confirmed by previous research. Also, relationship between perceived usefulness and the intention to use was not supported. This means that drivers for students to use such technology are not among the family or friend nor among sense of usefulness. Among other determinantas, they will use it only if they trust it and if its effortless.

This study may have practical use for universities and their professors to include more technology tools into classrom where students can collaborate and activly participate in some tasks and activities outside of classroom. Also, software companies my use this research to upgrade Google and Dropbox in terms of their functionality and easier interface to increase the number of users within this population.

The main limitation of this study is that it included predominantly students from the School of Economics and Business at the University of Sarajevo. Future research should examine these propositions within a longitudinal research design to examine the propositions among a number of student of different areas of study. The key challenge for future research should be the development of a model which will include additional variables such as grade average or student's innovation performance as a predictor of the intent to use technology. Future research may be directed at analyzing the remaining cloud computing dimensions and their impact on students' trust, and to testing inter-dependence of various elements. Since this research was based on the adoption of software as a service cloud computing, future research may deal with other factors relevant to the adoption of cloud computing with an emphasis on platform or infrastructure as a service on institutional level.

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