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DISCUSSION ABOUT PREEMPTIVE BAN ON LETHAL AUTONOMOUS WEAPON SYSTEMS

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Abstract. Advanced studies on artificial intelligence increase the concerns of many non-governmental organizations regarding the possibility of their use in combat systems. Even now, there are many weapon systems that can interact with the enemy in an automated manner. However, the concerns are raised due to the potential emergence of autonomous combat systems, which will independently make decisions about life or death on the battlefield, both in relation to military personnel and civilians. This article provides a review of terminological issues associated with the concept of automation and autonomy in the context of combat systems. It was concluded that the absence of a commonly accepted definition of “lethal autonomous weapon system” within international law contributes to many interpretations in this field. On the basis of source literature, the second part of this article presents current proposals aimed at a preventive ban on the design and use of lethal autonomous weapons systems. The essential deduction leads to the conclusion that introduction of a total ban on the design and use of this type of weapon systems is impossible, nevertheless as much as possible should be done in order to make sure that the critical decisions, especially those about life and death, will remain in the scope of human control and that they will not be made by the machines.

Keywords: automation, autonomy, international humanitarian law, lethal autonomous weapon system, meaning human control, killer-robot

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1. Introduction

Technological development inseparably accompanies the social development affecting humanity in a significant manner. Groundbreaking technologies make it easier for people to operate in many aspects of everyday life, however on the other hand they may also constitute a threat. It seems that artificial intelligence belongs to this type of technologies, which may change the perception of modern world in the future, but it may also be a threat in the case of its application in combat operations. Currently, there is a discussion on various types of forums – in mass media, scientific centres, non-governmental organizations, as well as international agencies, regarding the use of artificial intelligence in various manifestations of social life. It may be assumed a priori that the emergence of intelligent machines (robots) capable of self-learning may result in many benefits. However, there are also statements that negatively refer to the future use of artificial intelligence, or even such statements that call for the cessation of studies in this field. Such authority as Stephen Hawking said that “Success in creating AI would be the biggest event in human history (…). Unfortunately, it might also be the last, unless we learn how to avoid the risks. In the near term, world militaries are considering autonomous-weapon systems that can choose and eliminate target (…). Humans, limited by slow biological evolution, could not compete and would
be superseded by A.I.” (Sainato, 2015). Elon Musk warns that artificial intelligence is „our greatest existential threat” (Sainato, 2015) and points to the fact that „(...) Alongside the benefits, AI will also bring dangers, like powerful autonomous weapons, or new ways for the few to oppress the many (...) and in the future, AI could develop a will of its own – a will that will conflict ours” (Martin, 2017). The threats articulated in relation to artificial intelligence mainly refer to combat applications of the systems equipped with artificial intelligence or simply autonomous systems. The above-mentioned Elon Musk and Mustafa Suleyman, who is responsible for artificial intelligence in Google, as well as 116 other specialists from 26 countries, signed a letter in 2017 calling the United Nations (UN) to ban the works on these technologies.

It should be assumed that the development of artificial intelligence is not a threat in itself. The problem concerns its use in the Lethal Autonomous Weapon Systems (LAWS), their possible development and application in armed conflicts. The possibilities of their use in combat activities have their supporters, as well as opponents. Widespread attention of the media was drawn by an open letter drafted in 2015 and signed by over 3 000 scientists involved in robotics and studies on artificial intelligence, which was aimed against the approaching arms race in the scope of artificial intelligence and robotics (Future of Life Institute, 2015). This is part of a wider “campaign to stop killer robots” led by a coalition of leading non-governmental organizations. This issue also has been appearing on the forum of UN agencies dealing with arms control since 2013, as well as on the forum of the Human Rights Council and General Assembly of the First Committee on Disarmament and International Security. In the meantime, the European Parliament also called for a total ban on the development, production and use of completely autonomous combat systems (European Parliament, 2014), and this matter was raised at the UN, where a decision was made in 2016 regarding the establishment of an informal group of government experts, whose task will be to develop a report on lethal autonomous weapons.

It should be clearly emphasized that there are no currently functioning fully autonomous weapon systems. Nevertheless, now is the time for an in-depth discussion regarding this matter. Terminology covering the issues of autonomy comes to the fore - there are no recognized and acceptable definitions of autonomous combat systems within international law. The second aspect, raised in this article, refers to the potential activities associated with the preventive limitation of the design and implementation of lethal autonomous weapon systems. It is necessary to clearly emphasize that this is just one of the approaches to this kind of armament, because there is a large number of supporters, who advocate their development and implementation in the scope of equipping the armed forces, and present sensible arguments in this regard.

2. Terminological context regarding lethal autonomous weapon systems

The term “Lethal Autonomous Weapon System” is relatively new in the literature. For the first time, it appeared in the documents drawn up by the International Committee of the Red Cross in 2014 during a meeting of the experts from the field of autonomous technologies. In the report resulting from this meeting, the lethal autonomous weapon systems were defined as “weapons that can independently select and attack targets, i.e. with autonomy in the ‘critical functions’ of acquiring, tracking, selecting and attacking targets” (ICRC, 2014). This definition was maintained during a second meeting of the experts in 2016, with reference to the lethal autonomous weapon systems as an important issue of functioning of the Convention on Certain Conventional Weapons (ICRC, 2016).

Experts of the International Committee of the Red Cross indicate that this is a working definition (until this moment, there is no unequivocal definition of a lethal autonomous weapon system in the international law), referring to any weapon system that can perform functions autonomously. The proposed definition is aimed at supporting a better understanding of the problem and helping in discussions associated with lethal autonomous weapon systems, including in the legal and ethical application of this type of weapons. Some experts propose more precise definitions that would be able to show the differences between autonomous and highly automated systems. However, it seems that from a technical point of view this boundary gets blurred, while from a legal as well as ethical perspective the problems in both cases remain the same.
It should be mentioned that the term Lethal Autonomous Robotics (LAR) appeared in the early phase of discussion on autonomous weapon systems and it was understood as „weapon systems that, once activated, can select and engage targets without further human intervention” (United Nations, 2013). A term that appears very often in the public media discourse is “Killer Robots”, which is mainly associated with the science fiction movies. Currently, the prevailing view is that the name Lethal Autonomous Weapon Systems is more adequate. Therefore, it is necessary to clarify the concept of “autonomy” along with the related terms, which often lead to the terminological ambiguity. This is an important issue, e.g. from the viewpoint of legality of the use of lethal autonomous weapon systems in combat operations.

The fundamental problem in terminological issues is the distinction between autonomy and automation. Automatic systems are usually programmed to carry out specific activities in a defined and controlled environment. In turn, autonomous systems decide on their own whether to perform or not to perform the given task in a changing and unpredictable environment. The functioning of automated systems is based on specific principles, so it is deterministic and thus predictable. For example, the Phalanx system that has been used by the US Navy since 1980 and its ground defensive version - Centurion, as well as the Israeli Iron Dome are more advanced systems compared to the machines-automatic devices, but their principle of operation is based on the same model. Autonomous systems are much more independent, they have much greater freedom of action and thus, they are more unpredictable. Importantly, both categories - automatic and autonomous system - are not mutually exclusive and they are not homogeneous, because certain levels of automation and autonomy function in their case. There are no absolute criteria for distinguishing between automation and autonomy, but rather we may say that there is a continuum between them. It can be assumed that future combat systems will be multi-modal, hybrid: autonomous for certain roles (e.g. steering, launching) and automatic for the others (e.g. moving around).

In the case of many definitions of autonomy, it is indicated that the basis for the functioning of a given autonomous system is the lack of human intervention. However, in such case, the automated processes, in which certain sequences of actions will be performed without operator’s intervention, may also be considered as autonomous. Autonomous systems are independent in making decisions associated with the performance of a specific task. Thus, they can adapt to unpredictable situations and to a large extent this distinguishes them from automated systems, where during their programming various types of situations are anticipated and algorithms for proceeding in the case of their occurrence are developed. Comparing an autonomous and automated system, it may be concluded that the former is the final element of automation that is able to independently implement all or almost all of the actions in the form of a sequence of formalized operations. Therefore, it may be assumed that autonomy has its limits and a human may control the machine at any moment, even if such person is not in the decision loop (he/she is not an operator). In other words, such person is an element that has planned the whole process, along with individual sequences of its implementation (Kopeć, 2016). The above-mentioned approach describing the autonomy may be described as an extreme element of automation.

The second approach assumes the functioning of autonomy as an element different from automation. In this case, the behaviour of autonomous systems is not programmed and they have the ability to make independent decisions (Kopeć, 2016), i.e. in this case we can talk about artificial intelligence, which has the ability to make decisions and, moreover, to learn from gained experience, as well as to take into account the resulting conclusions in further activities.

In the case of defining autonomous systems, the most common approach includes the criterion of the degree of human control over a machine (human-machine relation). This categorization distinguishes semiautomatic systems (“human in the loop”), in which the automatic operation is possible until certain moment and then the human intervention is necessary. For example, weapon systems may independently affect the targets that have been previously selected and approved for combat by a human (operator). This type of armament includes various types of guided ammunition, also the “fire-and-forget” type (AIV/CAVV, 2015). The second group covers supervised systems (“human on the loop”), in which there is a possibility of uninterrupted autonomous operation, but with the possibility of human intervention at any given moment. Weapon systems from this group are
able to select and combat targets on their own, from the moment they were activated. However, the operator of such weapon system has the knowledge about what kind of objects can be targeted and the operator may intervene at any time by interrupting the process. In practice, these types of weapon systems (supervised) are used in defensive operations and in undemanding operational environment. They react directly to the defined threats, where the reaction of a human (operator) could be too slow, and in the case of doubtful situations the operator may react at any time (AIV/CAVV, 2015). The third group consists of fully autonomous systems (“human out of the loop”), without the possibility of human intervention. They refer to weapon systems that independently, without human participation, are able to select and combat targets in a previously defined geographical region, time interval and according to the adopted rules. The operator does not know what targets will be selected for combating, but it should be remembered that the types of combated objects have been previously defined by a human according to the specific criteria. In other words, a man decides earlier in what manner the autonomous combat system will carry out its tasks.

The above-mentioned considerations lead to the ascertainment that complexity of the system itself is manifested, when such expressions as: “automatic”, “automated” or “autonomous” are used for its description. Automatic systems implement simple mechanical functions that constitute a response to the environmental stimuli. Automated systems are more complex, because they shape their behaviours not only based on environmental stimuli, but they also take into account the previously defined rules. On the other hand, autonomous systems have the ability of self-direction, which does not result directly from the implemented software. Therefore, they are also able to shape their behaviour through the ability to self-learn. An interesting view on this issue is presented by A. Williams. He points out that in principle we should talk about the functions implemented by the combat system, which are performed in an automated or autonomous manner. According to him „Autonomous functioning refers to the ability of a system, platform, or software to complete a task without human intervention, using behaviours resulting from the interaction of computer programming with the external environment. Tasks or functions executed by a platform, or distributed between a platform and other parts of the system, may be performed using a variety of behaviours, which may include reasoning and problem solving, adaptation to unexpected situations, self-direction, and learning. Which functions are autonomous – and the extent to which human operators can direct, control, or cancel functions – is determined by system design trade-offs, mission complexity, external operating environment conditions, and legal or policy constraints. This can be contrasted with automated functions, which (although they require no human intervention) operate using a fixed set of inputs, rules, and outputs, the behaviour of which is deterministic and largely predictable. Automatic functions do not permit the dynamic adaptation of inputs, rules, or outputs” (Williams, 2015).

To sum up, it seems impossible to define a precise boundary between autonomous, automatic or automated weapon systems. Moreover, individual degrees of autonomy within the presented aspects may remain in multithreaded relations to each other. Simply put, at one end of the scale there are simple elements acting on the principle of stimulus-reaction, while on the other end there are complex systems capable of learning and drawing conclusions based on information obtained from the environment, in which they function. The distinguishing characteristic is the ability to adapt, independence in functioning and system’s ability to independently make decisions. The final conclusion is that currently it is not possible to talk about fully autonomous weapon systems (in reference to the existing weapon systems).

3. Proposals for limiting design and employment of lethal autonomous weapon systems

Dilemmas associated with the future use of lethal autonomous weapon systems will deepen due to the imprecision of legal regulations, different perceptions by society and the military, as well as ethical and moral concerns. It should be assumed with high probability that the works on artificial intelligence will be continued and, as a consequence, implemented in the projects of modern weapon systems absorbing the autonomy. In this context, it is reasonable to formulate the following question: should the lethal autonomous weapon systems be subject to a preventive ban on the design and use? Despite the fact that such systems are not functioning currently in the armed forces of any country, the discussion regarding the use of artificial intelligence for the development of autonomous weapon systems, which may have a lethal effect, has been ongoing on various
It seems that one of the radical solutions is the introduction of a total ban on the design and use of lethal autonomous weapon systems. Certain non-governmental organizations are calling for the introduction of a ban on functioning of autonomous combat systems under an international agreement. The Human Rights Watch is particularly active in this area (Human Rights Watch, 2012), along with its Campaign to Stop Robot Killers initiative. It is a global coalition of over 64 international, regional and national non-governmental organizations from 28 countries supporting the above-mentioned ban (Campaign to Stop Robot Killers, 2017). Some experts claim that there is an ethical and legal obligation to prevent a future situation, in which autonomous combat systems could independently make decisions relating to human life or death (Asaro, 2012). The justification for the aforementioned statement is based on two key arguments. Firstly, it cannot be ensured that lethal autonomous weapon systems will be able to comply with the provisions of international humanitarian law. Secondly, further dehumanization of war would lower the threshold for starting armed conflicts even more. There may arise legal gaps in relation to the responsibility, which can only be solved by using a total ban on the design and use of lethal autonomous weapon systems. According to the Human Rights Watch, these types of problems arise not only in relation to autonomous weapon systems, but also in relation to weapons, which have such a large influence on the selection of targets that the actual human control over them is doubtful (Human Rights Watch, 2012).

Critics of a total ban point out that at such an early stage of development of the technologies associated with artificial intelligence, including lethal autonomous weapon systems, their banning would be irresponsible. According to them, this type of armament provides a chance to drastically reduce the risk borne by your own soldiers, which is certainly an important factor in the framework of international humanitarian law (Schmitt, Thurnher, 2013). Moreover, according to the opponents of this ban, it makes no sense, because development and implementation of such systems are already inevitable, since in principle the necessary technologies already exist (Anderson, Waxman, 2013). Proponents of a total ban strongly reject this argument (Asaro, 2012). Technological progress is not inevitable and there have been new types of weapons, such as blinding laser weapons (O’Connell, 2014), which had been banned before they were implemented. On the other hand, this is the only example of a combat system in regard to which such far reaching agreement has been successfully achieved (Geiss, 2014).

In his report for the UN Human Rights Council, the UN Special Rapporteur - Christof Heyns presented the view that the issue of a total ban on the design and use of autonomous combat systems requires an international negotiation process, in order to find answers to the questions arising from the essence of functioning of the autonomous combat systems. For this purpose, an interdisciplinary committee should be established at the level of the United Nations, whose aim should be to achieve a consensus regarding the international legal framework for the development and implementation of lethal autonomous weapon systems (United Nations, 2013). Until the introduction of such framework, moratoria at national levels should be developed in the scope of research, production, sales and implementation of such systems (United Nations, 2014). Bioethicist W. Wallach also calls for the development of such moratoria, however none of the countries have decided to take such a step so far.

The second method of preventive restriction of the lethal autonomous weapon systems refers to the use of the “meaning human control” requirement. It seems that an approach based on this requirement may constitute a substantive, constructive starting point for further debate. A view prevailing among many countries and experts is that “meaning human control” in relation to lethal autonomous weapon systems is a factor that makes it possible to exercise control over critical decisions made by autonomous combat systems, and primarily over the decision regarding the use of lethal force. What is supposed to be precisely understood as “meaning human control” remains an open question. Nevertheless, this initiative is gaining importance among many countries, constituting a base for deepened discussion associated with the use of lethal autonomous weapon systems, including the possible ban on their use in some areas. The “meaning human control” expression itself suggests that there is no room for full autonomy. Thus, the criterion of “meaning human control” is to some extent contradictory,
which does not change the fact that it is a constructive starting point for further substantive discussions about which critical decisions should always be subject to such control and how the “meaning human control” should be implemented in detail. Therefore, it should be assumed that the required level of control may refer to several factors: period of time from the moment when the last decision was made by a human and exertion of power by the machine; environment in which the machine implements its tasks, particularly in relation to the question whether civilians are present in this environment; orientation of implementation, so whether the machine is supposed to perform defensive or offensive tasks; issue of machine’s configuration regarding the use of lethal force; level of training of people engaged in exercising control over the machine; the issue of possibilities and scope of human interference in the machine’s activities and, if necessary, stopping of the mission; implementation of safeguards in relation to responsibility, e.g. through complete electronic registration of robot’s activities. These are just some of the aspects that must be considered when using the “meaning human control” concept.

It should be noted that the concept in question is not reflected in the provisions of normative documents under international law. This wording was described by non-governmental organization called “Article36”, which points out that “meaning human control” refers to the information held by operator or other supervisor of the weapon within the planned combat action (knowledge of: target itself, area of attack, why a specific target has been selected for combating, mission objectives, desired effects associated with combating a specific object), the need for active human activity during implementation of the attack (commencement of the attack requires a positive acceptance of the operator), as well as the responsibility of persons evaluating the possessed information and for results of the attack (Article36, 2013). Despite the lack of an acceptable international definition of “meaning human control”, both opponents and supporters of autonomous combat systems indicate the need of ensuring some control over functioning of the above-mentioned systems, even if only for the public acceptance. Thus, the debate on autonomous combat systems includes a clear voice of a significant part of the experts referring to the need for exercising human control over these systems. Very common is a public view that lethal use of weapon systems requires the involvement of a human in the decision-making process, who will be able to consider ethical, moral and legal aspects of the use of a particular weapon system. Consequently, the concept of “meaning human control” has its implications in relation to the responsibility for effects of conducted combat operations.

Another proposed solution aimed at preventive restriction of the functioning of LAWS is associated with interference in the robot’s software and it is referred to as the “ethical governor”. One of the supporters of this solution is R. Arkin, who is a scientist dealing in robotics. According to him, a ban on the design and use of autonomous weapon systems is not necessary, because in the medium-term perspective the technology will develop to a degree that will allow it to comply with provisions of the law of armed conflicts in a much better way than people. For this reason, the premature ban on these systems would be ethically irresponsible (Anderson, Waxman, 2013). In order to achieve the appropriate standard, Arkin proposes the “ethical governor” model, which is based on an algorithm located in software and used to control an autonomous combat system that either allows or prohibits the system to use weapons in specific cases (Arkin, 2007). In other words, the appropriate algorithm fulfilling the function of a security buffer would be programmed in the system, in order to assess compliance with the law before each use of lethal force, based on the principles of international humanitarian law. Arkin does not exclude that the use of “ethical governor” algorithm will not save the lethal autonomous weapon system from making mistakes, however he assumes that the error rate would be much lower than in case of the soldiers.

The US Department of Defense (DoD) applied an interesting approach to the considered issues. This approach is mainly pragmatic and it assumes that autonomous and semiautonomous combat systems are to be constructed in such a manner that there is always “an appropriate level of human assessment in relation to the use of force” (US DoD, 2013). The assumed standard is not completely unambiguous and it is probably weaker than the demand of “meaning human control”. The UN Special Rapporteur, Christof Heyns correctly noted that the word “appropriate” in some situations could mean not exercising any control over the use of a lethal autonomous weapon system. Basically, DoD focuses on restrictive requirements concerning the control of hardware and software of the systems checked during repeated tests of weapons. Operators of autonomous and semiautonomous systems are required to comply with the rules of armed conflicts and any other applicable treaties.
of international law. It was clearly stated that only semiautonomous systems can be implemented to use lethal force. Autonomous systems cannot be used to select targets involving people, even if they are supervised by a human (US DoD, 2013). Nevertheless, DoD does not exclude the development of weapons that could be implemented outside these constraints, if they will meet more restrictive technical guidelines. W. Wallach correctly points out that in relation to the regulations regarding the tests for lethal autonomous systems, military necessity can easily mean that such weapons will be used before the completion of required tests. For example, this happened in the case of the war in Iraq and Afghanistan, where new technologies were introduced, such as unmanned aircraft systems, before all scheduled tests were completed. A similar situation may occur in the case of lethal autonomous weapon systems (Wallach, 2013).

In the area of proposals associated with the preventive restriction of functioning of the autonomous combat systems, there are also those relating to the improvement of legal regulations associated with their use. Control mechanisms within international humanitarian law for the introduction of new weaponry technologies apply in themselves to the autonomous weapon systems. Article 36 of the First Additional Protocol and the Martens Clause result in the fact that new weapons cannot violate the fundamental principles of international humanitarian law and the applicable rules of international law. In this context, various countries, at the occasion of the expert meeting in Geneva in April 2015, advocated further development and determination of substantive requirements for the testing of newly developed weapons, within the meaning of Article 36 of the First Additional Protocol, especially in relation to the lethal autonomous weapon systems (US Delegation Opening Statement, 2015). Undoubtedly, a more detailed substantive development of the control mechanisms resulting from Article 36 of the First Additional Protocol would be helpful and desirable. However, it should be assumed that such controls in themselves are not able to properly assess various ethical dilemmas, issues of international law and problems arising from the functioning of lethal autonomous weapon systems.

The aforementioned ponderations leads to the conclusion that it is necessary to establish new rules and higher standards of protection in relation to the potential use of lethal autonomous weapon systems. This results from the fact that the currently existing legal regulations and regulatory systems were created only for people and their specific weaknesses and deficiencies. This generates a question about the extent to which battle robots, which are able to operate independently, can be covered by this legal system. Standards for conducting warfare are based on basic ethical assumptions created more than 100 years ago. Even if we will recognize that so far they have more or less fulfilled their task, then along with the development of new types of weapons, particularly in relation to the combat artificial intelligence, they do not seem to be too convincing. Supporters of lethal autonomous weapon systems point to their better (in comparison to human) capabilities in the scope of resistance to stress, accuracy and endurance. In other words, the elimination of real human weaknesses hypothetically is supposed to lead to “pure, ethical and lawful killing”. On the other hand, both the deadly actions performed by machines and by people, as well as errors leading to death, are ethically equivalent. This leads to the ascertainment that it is not possible to easily assess the implementation of lethal autonomous weapon systems in the context of existing regulations, regardless of the fact which additional - legal or mechanical - security mechanisms will be used. Thus, there is a need to establish new and maybe much higher legal standards than those that are currently required by international humanitarian law. However, currently there are no indications for such approach in contemporary state practice. In the light of the current course of discussions on the occasion of expert meetings in Geneva, and above all in the context of current global political situation, such fundamental discussion is not in the immediate plans at the international level.

Scientists dealing with the issue of future functioning of lethal autonomous weapon systems also indicate other solutions ensuring a preventive restriction of this type of weapons. For example, J. Thurnher proposes the creation of four control mechanisms, which would always have to be taken into account before the implementation of autonomous weapon systems. Firstly, it is necessary to determine the clear rules of implementation, which will always be respected. Secondly, the scenarios of implementation should be limited in terms of time and space from the very beginning. Thirdly, autonomous systems should only be used in traditional armed conflicts between states, and not in civil wars or in order to suppress uprisings. Fourthly, human intervention (control) in the machine’s activity must always be guaranteed (Thurnher, 2012).
On the other hand, Anderson and Waxman proposed a multilateral process implemented by experts, similar to the one that ultimately led to the preparation of (legally non-binding) “Tallinn Manual” in the scope of application of international law for conducting cyber wars (Shmitt, 2013). Within this process, it is necessary to examine in what manner the lethal autonomous weapon systems can be adequately regulated by applicable regulations of international law, and to develop appropriate (non-binding) guidelines (Anderson, Waxman, 2013).

In the context of a potential ban on the design and use of lethal autonomous weapon systems, an important voice in the discussion was provided by W. Wallach, who developed a plan consisting of 10 points, which strengthened the need for introduction of the ban. Basically, this plan is based on the introduction of the overriding moral principle on the basis of which the machines will never make decisions about life or death of people. Moreover, Wallach points to the fact that even the best technologies may fail, hence the constant control is necessary, and the process of possible implementation of autonomous combat systems should be transparent for all countries (Wallach, 2017).

**Conclusions**

Lethal autonomous weapon systems should be recognized as prospective weapon systems. It may be assumed that in the longer perspective, they will change the quality of conducting combat operations, aspiring to be a turning point in the application of military technologies. Currently, no fully autonomous weapon systems are functioning, hence the ongoing debate regarding them is directed to the future, and therefore it includes uncertainties associated with their potential implementation and the resulting strategic advantages. Nevertheless, it should be assumed that far from the ongoing discussion regarding the combat robots, the importance of lethal autonomous weapon systems will increase in the longer perspective at all levels of military and political decision-making. This process will proceed gradually.

It must be emphasized that autonomy and automation in military systems are not a problem in themselves from the point of view of international law. Examples of their applications in the scope of disarming mines, such as sapper robots or autonomous (or automated) medical vehicles, do not raise any objections. It is also necessary to articulate the need to implement autonomous weapon systems in accordance with legal norms of the international humanitarian law, also in combat conditions. To what extent and when the technical development will allow to make it happen - especially in more complex conditions - remains unclear to date and we can only speculate. Nevertheless, the more precisely defined (in terms of time and space) scope of implementation and scope of tasks of lethal autonomous weapon systems, the greater probability that the legal provisions will be respected. In this context, it will be necessary to create appropriate control mechanisms based on the standards of international humanitarian law, which will allow to check whether lethal autonomous weapon systems are programmed in accordance with these regulations. On the other hand, the fundamental question that still remains current is whether it is ethically and legally justified to entrust decisions regarding the use of (potentially lethal) power to autonomous systems. Under international law, the soldiers and enemy fighters can be (in principle) attacked and killed as part of an armed conflict. However, the current law says nothing about whether they can be attacked and killed by autonomously operating machines.

It seems that the basis for further discussion and seeking solutions should be the introduction of the “meaning human control” requirement. This means that the starting point for a broader debate will be the basic assumption that critical decisions, so those concerning important legal interests, such as the right to life and the right to bodily integrity, cannot be delegated to fully autonomous systems in the legal (international law) and ethical context. In particular, the decisions regarding life and death must always be subject to final decision and control of a human. Therefore, any a priori demand for significant human control over critical decisions indirectly excludes the full autonomy of functioning of combat systems in these areas, so the ban on autonomy may only cover selected areas. In the case of going further, a more comprehensive ban on lethal autonomous weapon systems in the light of previous debates seems unrealistic at the international level. Undoubtedly, the inclusion of the “meaning human control” concept in detailed framework constitutes a challenge. Determining what decisions should be considered critical and what “meaning human control” really means require further
discussion with the participation of technical, military, legal experts, as well as experts on ethics. It is clear that the actual ability to exercise control, also in mission conditions, over critical decisions of the system must always be maintained.

To sum up, all initiatives aimed at increasing control over the decisions taken by lethal autonomous weapon systems have their justification. These initiatives should cover the following areas: technological, organizational, as well as legal area, and as a consequence they should prevent decision-making, particularly regarding life or death of people, by autonomous combat systems without human participation.

References


Martin, S. 2017. When AI robots are in the streets killing us it will be too late, says tech guru Elon Musk. Available on the Internet: https://www.express.co.uk/news/science/830501/AI-robots-killing-too-late-Elon-Musk


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National finance sustainability is likely an essential issue for the country’s development. These aggregated perceptions change the nation’s public sector and the security of citizens’ lives. Therefore, a significant focus on the broad improvement of finance studies could be an essential issue. Besides, that activity could be organized in connection with the applicable higher education programs. On the other hand, the government’s finance management understanding is treated differently in various countries. That is becoming increasingly essential condition that such a discussion does not directly benefit the common development of financial education in recent years. One of the possible ways to deal with personal finances in different economic conditions could be changing attitudes to finance knowledge among top management in universities. The young people could be supported by financial education programs that are clearly incorporated into their undergraduate or postgraduate courses. The correct management of these programs helps to improve student learning experience and the economic well-being. Moreover, the learning based on the transparent public administration believably educate patriots of the country and the peoples’ intolerance to non-transparent activities of public servants. The other important task of the paper is to reveal how public debt and public spending management could influence the issues of fiscal policy sustainability. In addition, this paper also tries to clarify questions about economic importance on financial education in the all levels of studies. Furthermore, the theoretical task of the paper is to show the size of the government debt, government debt service and expenditure in Lithuania and Latvia, during the last crisis in the first decade of the twenty first century. Then the overpaid debt services can be given to the hypothesis that an ordinary individual has less than EU average standard of financial and/or economical education. This conceptualization of the tax burden can encourage each citizen of the country to be responsible for the public servants’ activity and for the transparency of a budget planning process. The public revenue improvement is a really challenging procedure. Since using the same concept of taxes as fixed costs for public sector when person directly received nothing, but additional payments for the majority of public sector services. Therefore, confusion of terms is fairly constant, which once again shows the need for public finances literacy in the all areas of study programs for scholars. An authorized Lithuania’s tax burden usually comprises more than thirty percent from the country’s nominal gross domestic product in recent years. Nevertheless, political leaders and experts are suggesting the necessity of increasing Lithuania’s accumulated tax burden. However, there may be a fundamental mistake that social insurance contributions and compulsory health insurance contributions to the funds are not calculated into private individuals and legal entities tax burden. Fortunately the last year’s budget already considers social payments as a part of tax revenues. Unfortunately there are diminutive amount of signs in the continuity of Lithuania’s fiscal policy in the twenty first century.

Keywords: management; national finance; budget, taxation; sustainability; financial crisis

Reference to this paper should be made as follows: Dubauskas, G. 2018. National finance sustainability perception - the evidence from the last crisis in Baltics, Journal of Security and Sustainability Issues 7(4): 635-642. https://doi.org/10.9770/jssi.2018.7.4(2)

JEL Classifications: H12, H63, E65

1. Introduction

Finance and public money management have a historical concept of educational process and is one of the key economic and financial preparation in contemporary education. Money subject is possible with a number of complex aspects, both permanent change in the market economy and historical origin of money and monetary
politics. However, such knowledge is needful for the first grade university education. Financial education is relevant to each university’s undergraduate program. Incidentally, budget terminology and personal income taxation are known only from employment relationships concerning the mainly labour relations income or from the income that is comparable to labour relations income.

An achievable purpose of the paper is to show the importance of financial management education, including public perception of administration and financial aspects of public revenues’ mismanagement related to the government debt.

The object of the research is the financial (and partly economic) conceptualization of the sustainability in country’s fiscal policy comparing situation in Latvia and Lithuania with the debt management. In addition, the general misunderstanding about the fiscal policy and government’s finance management is discussed on the example of representatives from higher education institutions.

The objectives of the paper are as follows: to review financial and public finance development in the contemporary scientific literature; to display a necessity for the continuity of country’s fiscal policy started in the years of financial crisis, to demonstrate a necessity in deeper studies for students’ on public finance and public expenditure management.

One of the key tasks of the paper is to reveal how taxation, public spending and fiscal policy are perceived by the citizens. In addition, it also attempts to answer the questions about the financial and economic importance on financial education. Furthermore, the theoretical task of the paper is to show the size of government debt service and expenditure in Lithuania and Latvia, during the last crisis.

The research methods and methodological analysis used in the research were formal investigation and qualitative and quantitative research methods; the data was taken from Lithuanian, Latvian and the EU financial institutions. A modification of full-time and part-time students and cadets were used for informal surveys. It is also needful to remark that data are collected from teaching public finance management, studies and educational textbooks collected by the author for numerous years.

The continuity and sustainability of public finances is a sensual topic in the economic policy discussion currently. However, that happens as a result of the residual from former debt crises in the Europe and the long-term public spending pressure caused by the obstructive demographic change in more developed countries. This material analyses some of the conceptualizations that have been used to evaluate the public finance continuity in the case of Lithuania and Latvia. Also, some hypothetical criteria for sustainability is partially analysed. Moreover, the problem was analysed by a mode of literature compartmentalization. There is a weak agreement among economic professionals about the accurate theoretical standard for public finance continuity and in particular sustainability. Preferably each conceptualization to evaluate continuity and sustainability introduces its personal, sometimes differing, definitions. In this case study the strengths and weaknesses of each of the approaches and conditionally equate them with each other are examined. It was found that each formulation has its functions. Approaches should be viewed as an accumulative content. Accessibility of data and modelling resources, destinations of the analysis and other case-specific restrictions impact relative quality of the approaches in various situations. Nowadays continuity and sustainability of public finances is a well-timed theme in many modern countries. Uncertainty have been raised by several reviewers and analysts of state-supported finances in the Western countries where these finance are on a sustainable development shape. After the financial crisis of the first decade of the twenty first century the public debt of many countries has been on a sharp ascending route due to enforcement of various input and activity accumulation directed to financial field and the entirely system economy. An ascending liabilities integrated with long-term subjects similar to the sociological layer modification effects the symmetry between amount of people in the labour force and number of retired persons. That changes have advised fiscal agenda to study these cognitive factors sincere. Regrettably there are small indefinite quantity of signs in the continuity of Lithuania’s fiscal policy.
2. Financial Security Agenda in Educational Institutions

There is many misconception of the importance concerning financial education programs in higher education and other institutions. Especially important for the public finances is to understand their publicity in any case (Mandel, 2013). Moreover, during the totalitarian times, public finances were called “the state’s finances” because the tax burden understanding was the quite secondary topic to the dominating idea of the creation of “a new world”. Unhappily these provisions often remain in perceptions of public servants’ staff and even in the new generation concepts. At the same time the typical country’s economic, financial and administrative problems are almost always associated with the corruption and non-transparent situations in the public sector. Thus as it was mentioned these situations are probably the most common events in public finance management in the post-totalitarian countries. Therefore, finance and especially public finance literacy could be the one of keys solving country’s corruption perception.

In general, the concept of public finances in the education process starts with the tax and budget concepts. The municipal tax revenues and budget structure can be presented as a good example in which persons could see structure of public finance functioning and it should be likely the closest pattern to each citizen of a different country. Even more complicated is understanding of the State and National budgets or alternatively the hypothetical private enterprise finance. However, the biggest issue is how to finance public sector from the revenues of the taxable and the non-taxable inflows. In terms of financial education that is the more or less significant. At the same time person begins to understand the role of the state (and municipalities) in the economy. Then materializes admittance to the State’s economic regulation functions as a redistribution function, social function and the control function. Financial education is also important to the knowing of the State and local government’s revenue and expenditure structure, to the basic laws which provides a framework for the tax collection and the allocation of assignations.

The government debt services perception is frequently challenging. Since using the same concept of ‘taxes and fees for public sector directly received nothing, and charges for specific services (Brammer 2017). Therefore, confusion of terms is fairly constant, which once again shows the need for public finances literacy in the all areas of study programs for students or cadets. In this paper are moderately discussed issues about increased tax burden because of high price for the national debt provision. Nevertheless, political leaders and some experts are suggesting permanently the necessity of increasing Lithuania’s accumulated tax burden. However, there may be a fundamental mistake that social insurance contributions and compulsory health insurance contributions to the funds are not calculated into private individuals and legal entities tax burden. Fortunately, the last year’s budget already considers social payments as a part of tax revenues.

3. Government Debt during the Financial Crisis

The continuity and sustainability of public finance management could be represented by the example of the public debt policy in Lithuania and Latvia during the crisis of 2008-2011. These two different approaches can demonstrate how the national budget problems were solved in these two Baltic States. Considering the condition of the world economic crisis, the problem of the National debt management has grown to the big economic value. As the economic situation declines, discussions on the State debt become more than intense. The effective debt management is critical especially during crisis. The high government debt leads to the increase of the tax burden, to the growth of the state budget deficit, to the dropping of the state consumption level, to the reduction of public sector salaries and social security payments. The above has a negative impact on the state economy, which is being already weakened by the crisis, and, thus, is forcing the government to borrow more. The data on the gross national income and the government debt of the crisis period from 1995 till 2011 was taken. To evaluate the change of economic growth in the Baltic States quite useful can be a comparison of the national income in the years 1995-2011 (Table 1). The data on the gross national income and the government debt of the period from 1995 till 2011 was taken (Tables 2 and 4). The data on the gross national income (referred further as national income) for Latvia were retrieved from the official web page of the Central Statistical Bureau of Latvia (CSB, 2012). The data for Lithuania and Estonia were taken from the Eurostat database (Eurostat, 2013). The national income was taken in actual prices in millions of EUR (Sem-
However, the national income is total net earnings from the production of goods and services in a country over a period of time, usually one year, and consisting essentially of wages, salaries, rent, profits, and interest. Nevertheless there is an obvious decline in the national income in the all three Baltic countries in the year 2009 (Table 1).

<table>
<thead>
<tr>
<th>Lithuania’s National Income in billions of Euro</th>
<th>Latvia’s National Income in billions of Euro</th>
<th>Estonia’s National Income in billions of Euro</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td>4.0</td>
<td>3.2</td>
<td>1995</td>
</tr>
<tr>
<td>6.3</td>
<td>4.8</td>
<td>3.8</td>
<td>1996</td>
</tr>
<tr>
<td>9.0</td>
<td>5.1</td>
<td>4.7</td>
<td>1997</td>
</tr>
<tr>
<td>10.0</td>
<td>5.8</td>
<td>5.0</td>
<td>1998</td>
</tr>
<tr>
<td>10.1</td>
<td>6.0</td>
<td>5.2</td>
<td>1999</td>
</tr>
<tr>
<td>12.5</td>
<td>6.3</td>
<td>5.7</td>
<td>2000</td>
</tr>
<tr>
<td>14.0</td>
<td>7.0</td>
<td>6.2</td>
<td>2001</td>
</tr>
<tr>
<td>15.0</td>
<td>7.6</td>
<td>7.1</td>
<td>2002</td>
</tr>
<tr>
<td>16.0</td>
<td>9.2</td>
<td>8.0</td>
<td>2003</td>
</tr>
<tr>
<td>17.9</td>
<td>10.0</td>
<td>9.0</td>
<td>2004</td>
</tr>
<tr>
<td>21.0</td>
<td>12.6</td>
<td>10.8</td>
<td>2005</td>
</tr>
<tr>
<td>24.0</td>
<td>15.3</td>
<td>12.5</td>
<td>2006</td>
</tr>
<tr>
<td>27.6</td>
<td>20.1</td>
<td>14.8</td>
<td>2007</td>
</tr>
<tr>
<td>31.8</td>
<td>22.5</td>
<td>15.1</td>
<td>2008</td>
</tr>
<tr>
<td>27.1</td>
<td>20.0</td>
<td>13.6</td>
<td>2009</td>
</tr>
<tr>
<td>26.9</td>
<td>18.5</td>
<td>13.8</td>
<td>2010</td>
</tr>
<tr>
<td>29.8</td>
<td>20.4</td>
<td>15.0</td>
<td>2011</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Lithuania’s Debt to GDP, percent</th>
<th>Lithuania’s Debt to GDP percent change, year by year</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.6</td>
<td>0</td>
<td>2008</td>
</tr>
<tr>
<td>28</td>
<td>13.4</td>
<td>2009</td>
</tr>
<tr>
<td>36.2</td>
<td>8.2</td>
<td>2010</td>
</tr>
<tr>
<td>37.2</td>
<td>1</td>
<td>2011</td>
</tr>
<tr>
<td>39.2</td>
<td>2</td>
<td>2012</td>
</tr>
<tr>
<td>38.7</td>
<td>-0.5</td>
<td>2013</td>
</tr>
<tr>
<td>40.5</td>
<td>1.8</td>
<td>2014</td>
</tr>
<tr>
<td>42.7</td>
<td>2.2</td>
<td>2015</td>
</tr>
<tr>
<td>40.2</td>
<td>-2.5</td>
<td>2016</td>
</tr>
</tbody>
</table>


The Borrowing Policy in Lithuania was to choose private Financial Institutions when in Latvia it was the International Monetary Fund (IMF). However, credits annual interest rates in Lithuania were from four to nine percent versus Latvia’s interest rates from two to three percent.

Economical and financial policies during that crisis were independent in Lithuania (Table 2 and 4) versus regulated by the IMF in Latvia (Table 3 and 5). Outcomes of the independent fiscal policies in Lithuania in from years two thousand nine to two thousand ten were quite positive without significant new taxation on property and other private wealth. However new total taxes on property and on the all motor vehicles were introduced
in Latvia. A possible difference of the debt service expenditures in Lithuania from the total national public debt seventeen and a half billion euro is around eight hundred million euro in the year two thousand seventeenth. We can assume that the average annual interest rates are five percent - then annual interest payments could be around eight hundred million euro.

### Table 3. Latvia’s Debt to GDP, 2008-2016, percent

<table>
<thead>
<tr>
<th>Latvia’s Debt to GDP, percent</th>
<th>Latvia’s Debt to GDP percent change, year by year</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.7</td>
<td>0</td>
<td>2008</td>
</tr>
<tr>
<td>36.6</td>
<td>17.9</td>
<td>2009</td>
</tr>
<tr>
<td>47.4</td>
<td>10.8</td>
<td>2010</td>
</tr>
<tr>
<td>42.8</td>
<td>-4.6</td>
<td>2011</td>
</tr>
<tr>
<td>41.3</td>
<td>-1.5</td>
<td>2012</td>
</tr>
<tr>
<td>39</td>
<td>-0.5</td>
<td>2013</td>
</tr>
<tr>
<td>40.9</td>
<td>-2.3</td>
<td>2014</td>
</tr>
<tr>
<td>36.5</td>
<td>-4.4</td>
<td>2015</td>
</tr>
<tr>
<td>40.1</td>
<td>3.6</td>
<td>2016</td>
</tr>
</tbody>
</table>

*Source: Trading Economics 2018 [Access through Internet]: https://tradingeconomics.com/latvia/government-debt-to-gdp and authors calculations*

### Table 4. Lithuania’s GDP and GDP growth changes before and after crisis 2005-2013

<table>
<thead>
<tr>
<th>Lithuania’s GDP at current market prices, in billion of Litas (Euro)</th>
<th>Lithuania’s GDP Growth/Decline in percent, year by year</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>76 (22)</td>
<td>7.8</td>
<td>2005</td>
</tr>
<tr>
<td>81.9 (23.7)</td>
<td>7.8</td>
<td>2006</td>
</tr>
<tr>
<td>90 (26.1)</td>
<td>9.8</td>
<td>2007</td>
</tr>
<tr>
<td>92.6 (26.8)</td>
<td>2.9</td>
<td>2008</td>
</tr>
<tr>
<td>78.9 (22.8)</td>
<td>-14.8</td>
<td>2009</td>
</tr>
<tr>
<td>80 (23.2)</td>
<td>1.4</td>
<td>2010</td>
</tr>
<tr>
<td>84.6 (24.5)</td>
<td>5.8</td>
<td>2011</td>
</tr>
<tr>
<td>86.7 (25.1)</td>
<td>2.5</td>
<td>2012</td>
</tr>
<tr>
<td>89.9 (26)</td>
<td>3.7</td>
<td>2013</td>
</tr>
</tbody>
</table>


### Table 5. Latvia’s GDP growth changes before and after crisis 2005-2011 (percent change year to year)

<table>
<thead>
<tr>
<th>Latvia’s GDP at current market prices billions of EURO</th>
<th>Latvia’s GDP Growth/Decline in percent quarter by quarter</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.85</td>
<td>2.65</td>
<td>2005</td>
</tr>
<tr>
<td>13.54</td>
<td>2.95</td>
<td>2006</td>
</tr>
<tr>
<td>15</td>
<td>3.15</td>
<td>2007</td>
</tr>
<tr>
<td>14.6</td>
<td>-2.875</td>
<td>2008</td>
</tr>
<tr>
<td>11.25</td>
<td>-22.95</td>
<td>2009</td>
</tr>
<tr>
<td>10.75</td>
<td>-3.9</td>
<td>2010</td>
</tr>
<tr>
<td>11.44</td>
<td>6.4</td>
<td>2011</td>
</tr>
</tbody>
</table>

A possible difference of the debt service expenditures in Lithuania for the same total national public debt seventeen and a half billion Euro (Lithuania government debt to GDP, 2018). If the average annual interest rates would be as in Latvia i.e., two and a half percent then annual interest payments could be around four hundred million Euro. Therefore, Lithuania’s public sector annually pays about four hundred million euro more for the independent financial (and economical) policy. Nevertheless, it is a really good to have an independent public finance policy. Unfortunately, the last decisions of Lithuania’s government show misunderstanding of the huge cost for country’s independent fiscal policy. There are serious discussions in Lithuania’s parliament and in the government to introduce the overall property tax and even more serious to introduce the total private car tax in 2018. However, the Lithuania’s government still declares that investors appreciate good tax environment in Lithuania.

Meanwhile Lithuania paid three billion and two hundred million euro in the eight years for its right not to introduce the total property tax and the total motor vehicle tax and other taxes permanently pushed by the IMF the World Bank and the European Commission.

However, if mentioned taxes will be introduced it indicates Lithuania move to the same point as Latvia was in the year 2009th. Therefore, three billion and two hundred million in the eight years (or three billion and six hundred million billion Euro in nine years) were overspend and credibility of the public servants probably could be decreased in the same amount. It is essential to mention that all these calculations are only approximations, however the main trends could be seen.

However, there is a little indication in the continuity of the Lithuania’s government fiscal policy. Moreover, it could be aforementioned that insufficient financial education probably led to the nowadays situation. A similar evaluation concerning the Lithuania’s government fiscal policy efficiency and the financial management sustainability believably can be applied.

4. Conclusions

The critical evaluations of the former “crisis time” Lithuania’s parliament and government concerning financial policy (especially for expensive state credits supporting the independent financial policy) can be also used for the present-day government. Additionally, such behaviour illustrates not adequate financial decisions because of so high price paid for not introducing IMF suggested taxes during the economic crisis, but after a few years coming back to the same taxes.

It is obvious that there is an essential need for a wider financial education and better understanding of public and private finance risks in the all levels of public administration managers as well as for elected parliament members. Moreover, there is an obvious correlation of public and private finance security with future considerations on the monetary policy risks. Eventually a demand for advanced financial education with the idea on transparency in budget and taxation could be evident. The clearness of public spending and procurement and budgetary policy are essential issues for every country.

As it has been discussed in a number of European Union countries the process of financial education and financial literacy has existent importance to the general civic education for improving the financial knowledge and skills paradigm. This is especially true in higher education institutions in connection with the relevant higher education and research programs. Frequently public finance management and a variety of educational programming interfaces separate programs are treated differently. In some schools of higher social scientists are still debating whether the financial management and, in particular public finance management can be seen as an important educational and scientific branches of study, but in recent decades, are becoming increasingly important provision that such a discussion does not lead to direct benefits. Based on the public finances, in Central and Eastern Europe, has been called the state’s finances, the model can develop their country’s patriots and those intolerant opaque phenomena. Very often, the best citizen’s participation in the governance of their country is the payment of taxes that are intended for the most important state functions. One way to determine
the country’s aggregated or consolidated taxes paid by natural and legal persons could be the tax burden rate. Since such data to the Central European statistics authority of the national statistical departments or offices, often reflecting the country’s approach to the calculation of the tax burden. Therefore, understanding of that tax burden can really encourage each citizen’s insistence for the transparency of public servants in their operations and budget planning processes. That also could be an outstanding financial literacy practice for a new generation seeking the country’s sustainability with greater involvement in political activities.

Unluckily there are very few marks in the continuity of Lithuania’s fiscal policy. Moreover, it could be said that not sufficient financial education led to the nowadays situation. Analogous evaluations on Lithuania’s Fiscal Policy Efficiency and the Fiscal Policy Sustainability could be used.

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SECURITY, SURVEILLANCE AND RE-SOCIALIZATION ASPECTS IN CENTER FOR DRUG ADDICTS OF OLAINE CITY PRISON IN LATVIA

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Abstract. Drugs and prison - this consistent pattern is often undeniable. It is undeniable that most of those people who end up in prison, have used narcotic or psychotropic substances before. The use of substances that causes addiction and the development of addiction is influenced by a number of different factors; in some cases, by the imprisonment itself. The authors of the article offer, continuing with scientific publication cycle, which is dedicated to execution of sentence of imprisonment in Latvia and security aspects of the places of confinement, to become familiar with the study about peculiarities of execution of the sentence of imprisonment and security aspects at the newly established Center for drug addicts of Olaine city prison, where convicted persons, during the serving of a sentence, are involved in addiction reduction programs. The aim of the execution of the sentence of imprisonment is to effectively apply all conditions of the sentence execution in respect of the convicted person, thus ensuring re-socialization of a person and the legal behavior of a person after execution of the sentence. However, it is undeniable that only those persons, who are free from narcotic or psychotropic substances addiction can be re-socialized; therefore, the study obtains the status of vitally important topicality. This article reflects the results of the conducted study about peculiarities of execution of the sentence of imprisonment at the Center for drug addicts of Olaine city prison. The article identifies issues and suggests possible solutions. Based on the study there has been developed a series of recommendations for the staff of the places of confinement working with convicted drug addicts. The authors suggest that the drawbacks and issues discovered within the framework of this study, as well as proposed solutions, will make a significant contribution to the development of the penalty execution theory in Latvia. It will be possible to improve the sentence of imprisonment execution legal framework and practice by using new scientific cognitions stated in this study.

Keywords: imprisonment, execution of the sentence, convicts, security, re-socialization, addiction reduction program.


JEL Classifications: K1, K14, N43

1. Introduction

The use of substances that cause addiction and the development of addiction are influenced by a number of different factors. Apart from objective features (age, gender, type of the populated area, etc.) there are a number of individual psychological and subjective factors that encourage or hinder desire to try the substances and the use of substances. One of the strongest risk factors and at the same time one of the strongest protective factors are the individual qualities and values (Koroleva et al, 2007; Matvejevs 2018).
Drugs and prison – this consistent pattern is often undeniable. It is undeniable that most of those people who end up in prison, have used narcotic substances before. Losing freedom in Latvia is just like a side-effect of a narcological disease that has not been timely prevented. However, isolation from society by itself is not a cure for this disease (Luste 2016).

The authors of the article offer, continuing with scientific publication cycle, which is dedicated to execution of sentence of imprisonment in Latvia and security aspects of the places of confinement, to become familiar with the study about peculiarities of execution of the sentence of imprisonment and security aspects in the places of confinement in respect of convicted persons, who are serving their sentence at the Center for drug addicts of Olaine city prison, and who are involved in addiction reduction programs. Readers can get acquainted with authors’ earlier scientific publications, which are dedicated to peculiarities of execution of the sentence of imprisonment and security aspects in the places of confinement in respect of convicted women, convicted minors and the persons sentenced with deprivation of liberty for life, in the following journals: Journal of Security and Sustainability Issues Nr.3(3), 2014, Journal of Security and Sustainability Issues Nr.4(3), 2015 and Journal of Security and Sustainability Issues Nr.6(1), 2016.

This article reflects the results of the conducted study about peculiarities of execution of the sentence of imprisonment in respect of convicted persons, who are serving their sentence at the Center for drug addicts of Olaine city prison, and who are involved in addiction reduction programs in Latvia. This article examines peculiarities of execution of the sentence of imprisonment at the Center for drug addicts of Olaine city prison, as well as identifies issues and suggests possible solutions.

On October 5, 2016 a new Center for drug addicts, governed by the administration of the places of confinement, was opened in Olaine city prison, which is a structural unit of the Olaine city prison. The Center for drug addicts of Olaine city prison is intended for convicted persons, who suffer from narcotic or psychotropic substance addiction, with the aim of reducing and minimizing and eradicating the risk of addiction of these individuals and teaching them to live with this addiction problem when returning from the imprisonment into society. At the same time, it should be noted that only addiction-free convicts can be fully involved in the re-socialization process. L. Medina, the Deputy of the State Secretary of the Ministry of Justice, acknowledged that if we do not work with these addictions, then nothing else will affect this person, neither schooling nor acquisition of new work skills. Unfortunately, our past efforts to prevent addiction in the places of confinement (mainly due to lack of finance) have been extremely fragmentarily (Luksa 2015).

2. The Center for drug addicts of Olaine prison (Latvian Prison Hospital): a new philosophy of execution of the sentence of imprisonment

The project that was started already on September 18, 2013, was the plan of the administration of the places of confinement to create conditions for intensive re-socialization of prisoners, who suffer from drug addiction. According to the administration of the places of confinement, within the framework of this project, for this purpose, the methodology was borrowed (and customized to local conditions), which has been approved in the prisons of Norway and Poland; prison staff trainings were organized, as well as other activities were performed for the establishment of a drug addict re-socialization system within the conditions of confinement. 200 drug addicted imprisoned persons are to be placed in the Center at the same time. Until now, due to the outdated infrastructure in Latvian prisons, it was problematic to ensure the isolation (a safe environment) of the imprisoned drug addicts from narcotic and psychotropic substances, as well as to provide preconditions for re-socialization work with special target groups. When initiating the re-socialization of persons, who suffer from drug addiction, it is necessary to close all access pathways to the addictive substances. Their movement outside the department should be limited and controlled.

The authors of the study completely agree with the stated conclusion the prevalence of drug use depends on the availability of narcotic substances to the public. The easier it is to get drugs, the greater the risk that they will be used (Koroleva, Mierina, Goldmanis, Trapencieris 2008). According to the public report data of the administra-
tion of the places of confinement, in 2017, 1684.7753 grams of narcotic and psychotropic substances and 1194 tablets containing narcotic and psychotropic substances were taken out of the places of confinement of Latvia.

It is worth reminding that the study data obtained in 2014 suggests that the imprisonment, in all respects, has a more contributing rather than refraining effect in respect of drug use. According to the study, regardless of the experience of use of narcotic and psychotropic substances, 42% of convicted persons have confirmed that if they used drugs before the imprisonment, they will continue using them in the place of confinement. Study data also indicate that 19% of convicts start using narcotic substances precisely during the imprisonment.

Addiction is a biopsychosocial disease, that results in functional and later also organic disorders in the functioning of the human body, the change of way of thinking, the content, and the change of style of work associated with the perception of new information, the ability to recognize emotions and expression types. In view of the above, it can be concluded that addiction is a disease during which an individual is unable to control the use of psychoactive substances or these substances negatively affect his/her behavior. The psychoactive substances and inability to control one’s behavior, in their turn, are among the most common causes of commitment of criminal offenses.

In 2014, a study conducted in Latvia also found that during the last year 89% of convicts used alcoholic beverages before the imprisonment. More than half of those convicted persons (55%) used alcohol quite often – 28%, they used it 1-2 times a week, and 27% – 3 times or more per week. The convicted users of psychoactive substances experience the greatest feeling of discomfort and a feeling of “unfreedom” not from the fact of isolation itself, but rather from their bad habits - alcohol, narcotic, psychotropic or toxic substance addiction. The study found that 85% of convicts in the places of confinement of Latvia suffer from addiction, which makes it harder for them to be included in social activities (Klave, Bebrisha, Zhabko, Shupule, Jansone 2014).

Prison should be the kind of institution that helps the addicts to get rid of addiction, which caused these persons to end up in prison in the first place. It follows that, for the sake of public safety and other socially important objectives, the overarching tasks of the Center for drug addicts of Olaine city prison should be as follows:

a) to create an appropriate social environment in which clients would be denied any access to psychoactive substances;

b) to involve clients in social behavior correction programs, to develop their positive social skills and abilities, to learn and respect the values that are recognized in society;

c) to reduce the risk of repeated criminal offenses.

According to M. Luste, the leader of this project, nowadays a new prison philosophy is emerging as compared to what we inherited from the Soviet times. It might seem like this project is just a work with yet another target group. However, in reality, I see it as a restart test of all the system of the places of confinement, introducing a new philosophy in respect of prisoner care (Luste 2014).

According to the data provided by the administration of the places of confinement, for March 6, 2018, 48 convicts of the Center for drug addicts of Olaine city prison were involved in addiction reduction programs, however since September 1, 2017, the convicted women can also be included in addiction reduction programs of this Center. A woman being in prison is an anomaly, but it is well known fact that the number of female prisoners around the world is increasing. Unfortunately, it must be noted that a large proportion of convicted women have had some sort of encounter with drug or alcohol problem. Drug use among women is increasing and the increased drug use means that the majority of these women will end up in prison (Zahars, Stivrenieks 2015). In its turn, the involvement of minor convicts in these programs could start in 2018, for the analysis of the components of crime of the criminal offenses committed by minors shows that the criminal offenses committed by minors are becoming more aggressive, more brutal and better planed, and are often directly or indirectly related to alcohol, psychotropic or narcotic substance abuse (Zahars, Stivrenieks 2014).

The fifth part of the Section 18 of Law On The Sentence Execution Code of Latvia provides that convicted
persons, who are involved in re-socialization program for reduction of addiction shall be held separately from other convicted persons in conformity with the provisions of the first part of this Section, and the first part of the Section 61.8 of Law On The Sentence Execution Code of Latvia provides that a convicted person can be involved in the addiction reduction program if there is a high risk that he or she may start using alcohol, narcotic, psychotropic or toxic substances. The addiction reduction program lasts up to 12 months and is implemented by ensuring the isolation of convicts, involved in the program, from other convicts during the whole program implementation period. According to I. Spure, the head of the administration of the places of confinement, the work and life of prisoners in this center are based on the principle of the therapeutic community, and one prison unit is provided only for 24 prisoners, who during the training, are divided into 12 persons. The new infrastructure allows the prison to execute this program. The prison staff works in accordance with the “contact person principle”. Employees carry out both support and control functions. Unlike the usual model, each convict is assigned a support person among employees, which allows for a more personalized approach to re-socialization (Paparde 2016).

This center offers 2 to 12 months long re-socialization programs, that are currently intended only for adult prisoners. Programs are aimed at reducing addiction, but they are not therapeutic programs. Both programs are specifically designed to reduce the addiction of adult prisoners. One of the treatment programs is based on the Norwegian experience of treatment of addiction – “Atlantis”, which focuses on the study of the past, and the ability to understand the causes of addiction, which includes several tasks that have to be completed in order to achieve the set goal. It teaches the convicts to acquire social skills, to plan and to structure their life, to change their way of thinking and behavior, and the other program – “Pathfinder” is based on the experience of the Polish prison system; it is focused on the future, the development of social skills, the restructuring of life and normal functioning without the need for addictive substances; it is based on the physical, psycho-social and spiritual aspects, where the method of cognitive - behavioral therapy and social training are the dominant factors. The Center for drug addicts is the institution in which it is possible to prevent the endogenic and exogenous causes and the contributing factors of new criminal offenses. The work organization of the institution is based on the principles of psychotherapeutic community, which have been tested in many places in the world and have been recognized as the most effective way to free the clients from addiction who participate in this program. Setting a goal to prevent crime, one must be aware that its implementation is possible only by moving toward it from two directions: firstly, by transforming the social environment and eliminating the exogenous factors of crime; secondly, by transforming the personality of the offender and eliminating endogenous factors, by the influence of which the individual has committed a criminal offense (Zahars 2017).

3. Procedure for addition of convicted persons in addiction reduction programs

Convicted persons are being involved in addiction reduction programs only on a voluntary basis. According to I. Ushacka, the head of the Center for drug addicts, the issue of how to choose the clients of the new center is not simple. Application for re-socialization program at the Center for drug addicts of Olaine city prison is the voluntary choice of prisoners; the same as with electronic cuffs. So far, prisoners were not particularly eager to participate in re-socialization programs. Although the living conditions in the Center for drug addicts of Olaine city will be good and exemplary – there are also pleasant advantages, it is also clear that the treatment process is no fun. You cannot force anybody to do anything, especially the drug addicts (Luksa 2015).

The second part of the Section 61.8 of Law On The Sentence Execution Code of Latvia provides that the convict who wishes to participate in the addiction reduction program shall submit a corresponding application to the head of the place of confinement. Taking into account the assessment of the risks and needs of the convicted person, the head of the place of confinement shall draw up a proposal regarding the involvement of the convict in the addiction reduction program and shall send it to the head of the administration of the places of confinement. The head of the administration of the places of confinement, having evaluated the proposal of the head of the places of confinement, makes a decision regarding the involvement or refusal to involve the convict in addiction reduction program, or decides to postpone the convicted person’s involvement in the addiction reduction program, and informs about it the head of the place of confinement and the convicted person in writing.
The proposal of the head of the places of confinement to involve the convict in addiction reduction program or the refusal to prepare such proposal, and the decision of the head of the administration of the places of confinement regarding the involvement or refusal to involve the convict in addiction reduction program, or the decision to postpone the convicted person’s involvement in the addiction reduction program cannot be challenged or appealed.

The internal order in the unit of the place of confinement, where the addiction reduction program is implemented, is stipulated by the Regulations No.23 “The rules of internal order in the division of the place of confinement where the re-socialization program is implemented for the reduction of addiction” of the Cabinet of Ministers as of January 3, 2017. The authors of the study, having analyzed the norms of the Law On The Sentence Execution Code of Latvia and the norms of the above-mentioned Regulations of the Cabinet of Ministers, conclude that, despite the fact that the paragraph 2 of the Regulations No.23 “The rules of internal order in the division of the place of confinement where the re-socialization program is implemented for the reduction of addiction” of the Cabinet of Ministers as of January 3, 2017 provides that convicts involved in the addiction reduction program are not subject to the general provisions of the internal order of the place of confinement, however such requirement does not follow from what is stated in the Law On The Sentence Execution Code of Latvia.

The paragraph 16 of the Regulations No.23 “The rules of internal order in the division of the place of confinement where the re-socialization program is implemented for the reduction of addiction” of the Cabinet of Ministers as of January 3, 2017 provides that the daily regimen of the convicted persons at the Center for drug addicts is determined by the order of the head of the Olaine city prison. The daily regimen of the convicted persons includes a number of daily activities, i.e.: re-socialization and regime activities, convicted persons’ mealtimes, daily walks, rest time, convicted persons’ visiting hours, time for telephone conversations, as well as an uninterrupted eight-hour sleep. In addition to the above, it is useful to note that convicted persons, who involved in addiction reduction programs at the Center for drug addicts of Olaine city prison, are checked daily with rapid tests in order to determine whether they have used narcotic or psychotropic substances. This type of control plays both a practical and a preventive role in the fight against addiction. In turn, according to the paragraph 22.12. of the Regulations No.23 “The rules of internal order in the division of the place of confinement where the re-socialization program is implemented for the reduction of addiction” of the Cabinet of Ministers as of January 3, 2017, a convict who is involved in the addiction reduction program, is obliged to undergo a test in order to determine whether the convict has used alcohol, narcotic, psychotropic or toxic substances. The refusal to undergo such testing is considered to be a disciplinary infraction. Psychologist V. Semenkova believes that when determining rules of the regime of convicted persons, they must be psychologically substantiated and psychologically purposeful, so that the organization of life and activity of the convicts would comply with the relevant scientific requirements. The rules maximally affect the convicted persons’ psyche, developing the necessary moral and psychological characteristics. The use of psychological data allows us to create a regime in such a way as to optimize the distribution of the load: on the one hand, to create a certain load that has a positive effect on the development of a personality, but, on the other hand, would also create motivation for others (Semenkova 2001).

4. The regime of execution of sentence of imprisonment as an integral part of addiction reduction programs

Rule 36 of the “Standard Minimum Rules for the Treatment of Prisoners” (the Nelson Mandela Rules), approved by the United Nations General Assembly as of December 17, 2015, provides that discipline and order shall be maintained with no more restriction than is necessary to ensure safe custody, the secure operation of the prison and a well-ordered community life. The paragraph 102.1 of the Recommendation Rec (2006)2 of the Committee of Ministers to member states on the European Prison Rules of the Council of Europe provides that in addition to the rules that apply to all prisoners, the regime for sentenced prisoners shall be designed to enable them to lead a responsible and crime-free life, and the paragraph 102.2. of these Recommendation provides that imprisonment is by the deprivation of liberty a punishment in itself and therefore the regime for sentenced prisoners shall not aggravate the suffering inherent in imprisonment. It must be acknowledged that in Latvia criminal punishment policy is in the process of transition to European and democratic values (Stivrenieks 2016).
The requirements of the regime of execution of sentence of imprisonment in the Center for drug addicts is stricter regarding certain issues than those applied in respect of convicts of closed and partly-closed prisons. The paragraph 21 of the Regulations No.23 “The rules of internal order in the division of the place of confinement where the re-socialization program is implemented for the reduction of addiction” of the Cabinet of Ministers as of January 3, 2017 provides that the convicts placed in the Center for drug addicts only have the following rights: to keep in the living accommodation the items necessary for personal use in the assortment and quantity specified by these provisions. The total weight of the items that a convicted person is allowed to keep in the living accommodation of the Center for drug addicts shall not exceed 15 kilograms. The total weight of the personal items of a convicted person in the Olaine city prison shall not exceed 30 kilograms. The convicted person has the right to address the head of the Olaine city prison by submitting a written application requesting permission to be allowed to keep religious items and literature. The convicted person has the right to be accepted by employees at the appointed time according to the daily plan. At the request of the convicted person, he may be admitted without the presence of other persons. The convicted person has the right to ask for a chaplain, so that he would invite a clergyman of convicted person’s denomination, as well as the right to address the head of the Olaine city prison by submitting an application regarding the termination of the agreement mentioned in this provision. The convicted person has the right to smoke at the stipulated place and time. In addition to the above, the paragraph 22 and 23 of the Regulations No.23 “The rules of internal order in the division of the place of confinement where the re-socialization program is implemented for the reduction of addiction” of the Cabinet of Ministers as of January 3, 2017 provides a number of obligations and prohibitions.

The ninth part of the Section 70 of Law On The Sentence Execution Code of Latvia provides that for violation of the requirements of the sentence serving regime the following punishments may be imposed on convicted persons, who are involved in the addiction reduction program: the giving of a warning, the giving of a reprimand, the prohibition to purchase food products and tobacco products in the shop of a deprivation of liberty institution for a time period up to one month, the prohibition of the next visit by relatives and other persons, placing convicted persons who are serving sentences in prisons in a punishment isolation cell for a time period up to fifteen days and nights or placing convicted persons in a disciplinary isolation cell for a time period up to ten days and nights, canceling pre-assigned encouragement. With regard to convicts involved in addiction reduction programs in the Center for drug addicts, the norms of The Sentence Execution Code of Latvia do not provide such disciplinary punishments as: the prohibition to use a personal TV set or a transistor radio, the prohibition to the current telephone call or a video call.

In addition to the above, it is useful to point out that in practice the disciplinary punishment - placing convicted persons in a disciplinary isolation cell is applied very rarely and only in a case of extreme necessity, because placing the convicted person into isolation cell for a time period up to fifteen days would significantly delay the acquisition of the addiction reduction program requirements. The first part of the Section 45 of Law On The Sentence Execution Code of Latvia provides that the persons sentenced with deprivation of liberty, except persons, who are involved in the addiction reduction program, and the convicted persons who are sentenced with temporary deprivation of liberty, shall have an opportunity to meet their relatives and other persons without the presence of a representative of the deprivation of liberty institution in accordance with the procedures and extent laid down in this Code: short visits – from one to two hours in order to facilitate the maintaining and renewal of socially useful contacts; long visits – from six to forty-eight hours in order to facilitate the maintaining of kinship and family contacts, and the sixth part of the Section 61.8 of Law On The Sentence Execution Code of Latvia provides that the convicted persons, who involved in the addiction reduction program, may be visited by relatives and other persons with the presence of a representatives of the deprivation of liberty institution, once a month, from one to six hours, in order to facilitate the maintaining and renewal of socially useful contacts.

The authors of the study, having analyzed the extent of the rights with regard to convicted persons, who are serving a sentence of imprisonment in the Center for drug addicts, which is provided in the first part of the Section 45 and the sixth part of the Section 61.8 of Law On The Sentence Execution Code of Latvia, have established that these convicted persons are not entitled to meet relatives and other persons in accordance with
the usual order. The norms of the Law On The Sentence Execution Code of Latvia precisely stipulate that those convicted persons, who are involved in re-socialization programs, may be visited by relatives and other persons once a month or they may be denied visitation right by the prison administration.

In the light of the above, the authors of the study point out that this practice may, to a certain extent, contravene the Recommendation Rec (2006)2 of the Committee of Ministers to member states on the European Prison Rules of the Council of Europe. The paragraph 24.1., 24.2. and 24.4. of the European Prison Rules points out that prisoners are allowed to meet with their family members and other persons as often as possible. It is also emphasized that despite the existing restrictions and control, a minimum level of communication must be ensured so that prisoners would be able to strengthen their family relationships in the most normal circumstances.

The authors of the study also point out that convicts, who are involved in addiction reduction programs, unlike the convicts of closed and partly-closed prisons, do not have the right to receive personal clothing and other items and belongings in accordance with the Regulations No.423 “The Rules of Internal Order of Penitentiary Institutions” of the Cabinet of Ministers as of May 3, 2006, but the paragraph 48. of the Regulations No.23 “The rules of internal order in the division of the place of confinement where the re-socialization program is implemented for the reduction of addiction” of the Cabinet of Ministers as of January 3, 2017 provides that the convicted persons of Olaine city prison wear season-appropriate headgear, footwear and clothing with an identification badge provided by Olaine city prison. In reality, the Regulations No.23 of the Cabinet of Ministers as of January 3, 2017 are violated, as a result of which the persons, who are involved in the re-socialization programs to reduce addiction do not receive such clothing. Such practice does not comply with the requirements of international standards and norms, as well as the principles of good governance. From the foregoing, it can be concluded that the absence of uniform in the Center for drug addicts of Olaine city prison may create various risks for the overall security of this institution and impede the search of clients of this institution if they have arbitrarily left the territory of the institution.

5. Security aspects of the Center for drug addicts of Olaine city prison

The administration of the places of confinement is responsible for maintaining order at the place of confinement and for ensuring the safety of prisoners. Therefore, prison staff can impose disciplinary punishments and security measures in respect of prisoners and, in specific cases, use force, but always only in accordance with the law and strictly following the particular procedure. According to the former Minister of Justice, B. Broka, the prison employee should be aware that his work involves an increased level of risk, and therefore compliance with safety rules is absolutely mandatory and no deviation from it is allowed (Broka 2014).

The security aspects of the place of confinement in the Center for drug addicts are based on both the general safety and regime requirements, as well as by putting a dynamic security model into practice. Dynamic security is the regular and consistent interaction with offenders and the timely exchange of information. The principles of dynamic security are professionalism, understanding of the situation of convicted persons, positive and friendly relations, strictness, but also justice and information exchange between all employees of the institution. Good internal order and the highest level of security at the place of confinement can be achieved when the officials responsible for security, surveillance and re-socialization cooperate with each other rather than compete or dominate one another and share information rather than conceal it (Zahars, Stivrenieks 2015).

In order to maintain good order, the Council of Europe recommends focusing on dynamic security, developing a positive relationship between the prison staff and the prisoners, based on strictness and justice, combining it with an understanding of the personal situation of convicted persons. This requires: the long-term interaction between prisoners and prison staff, especially in the context of activities, mechanisms for resolving disputes with and between prisoners by way of reconciliation, and the opportunity for prisoners to play an active role and make personal decisions in the daily life in prison, entrusting them with as wide a range of issues as possible (Cretenot 2013).
The first part of the Section 13.2 of Law On The Sentence Execution Code of Latvia provides that the commission responsible for placement of convicts, which is established by the order of the head of the place of confinement, shall determine in which section, division and cell of the place of confinement the convicted person will be placed, taking into account free space in cells, psychological compatibility of convicted persons, state of health, attitude towards smoking and previous criminal experience, the fifth part of the Section 18 of The Sentence Execution Code of Latvia, in its turn, provides that convicted persons, who are involved in the re-socialization program for reduction of addiction shall be held separately from other convicted persons. In practice, the convicted persons, who are involved in addiction reduction programs at the Center for drug addicts, are placed (one or two persons) in a two-place cells. The convicted persons are placed in divisions (rooms), by observing the commune principle, which means that all the convicts in the divisions participate in solving everyday household issues. In this way, the social communication and the culture of relationships of the convicts is renewed. The first part of the Section 47.1 of Law On The Sentence Execution Code of Latvia provides that convicted persons shall be permitted to use TV sets and transistor radios (without the possibilities of voice recording) of the deprivation of liberty institution and personal TV sets and radio receivers (without the possibilities of voice recording), as well as other personal household appliances, at the time and in accordance with the procedures laid down in the internal procedural regulations of the deprivation of liberty institution, and the third part of this Section provides that the rights set out in part one of this Section do not apply to convicts, who are involved in the addiction reduction program. The convicts, who are involved in the addiction reduction program are allowed to use, in common areas, TV sets and transistor radios (without the possibilities of voice recording) of the deprivation of liberty institution, in accordance with the agenda established by the head of the deprivation of liberty institution. Such a ban in respect of convicts, who are involved in an addiction reduction program is intended to prevent the transmission of narcotic, psychotropic or other intoxicating substances through the supply of household appliances to the Center for drug addicts. It is no secret that convicted persons use all the possibilities to get into the places of confinement not only intoxicating substances, but also other items that are prohibited in the places of confinement. According to the report (2017) data of the administration of the places of confinement, in 2017, 2284 mobile phones, 905 cell phone components, 1772 mobile phone SIM cards, 199 syringes, 168 syringe needles, 1431 self-made cutting and piercing objects were removed from the places of confinement of Latvia.

The first part of the Section 49.2 of Law On The Sentence Execution Code of Latvia provides that a convicted person who is serving the sentence at the highest level of the sentence serving regime in a partly-closed prison, an open prison or a juvenile correctional institution may, by lodging a written submission to the head of the deprivation of liberty institution, request a permission to temporarily leave the deprivation of liberty institution for up to five twenty-four hour periods due to death of a close relative or a serious illness that endangers the life of a sick person, and the eleventh part of this Section provides that the information mentioned in this Section in respect of the right of a convicted person to request a permission to temporarily leave the deprivation of liberty institution does not apply to convicted persons, who are involved in an addiction reduction program, except when it is provided for in the conditions of an addiction reduction program. The convicted persons, who are involved in the addiction reduction program may exercise the right to leave the deprivation of liberty institution only in the presence of an official of the deprivation of liberty institution and for a period of up to eight hours.

The authors of the study, in their analysis of the practice, have found that convicts, who are involved in the addiction reduction program are given the opportunity to take a temporary vacation outside the place of confinement, but these convicted persons may leave the prison territory only for a specific purpose and always accompanied by the employees of the place of confinement. The purposes for leaving the territory of the place of confinement in practice are different. They are related both to resolving of social problems of the convicts, the attendance of public institutions, and leisure activities, when convicted persons have the opportunity to visit museums, go hiking, or participate in other activities.

Leisure activities play an important role during the period of execution of the sentence of imprisonment, especially in respect of convicted persons, who suffer from addiction to different intoxicating substances. The paragraph 27.6. of the European Prison Rules provides that Recreational opportunities, which include sport, games,
cultural activities, hobbies and other leisure pursuits, shall be provided and, as far as possible, prisoners shall be allowed to organize them. During the execution of the sentence of imprisonment, it is very important that the opportunities of organized leisure activities are meaningful and substantial, aimed at creating positive values.

The sixth part of the Section 61.8 of Law On The Sentence Execution Code of Latvia provides that who involved in the addiction reduction program, may be visited by relatives and other persons with the presence of a representative of the deprivation of liberty institution, once a month, from one to six hours, in order to facilitate the maintaining and renewal of socially useful contacts. Based on the above, a new way to visit convicted persons was introduced at the Center for drug addicts – “Family Days”. According to I. Ushacka, the head of the Center for drug addicts of Olaine city prison, the support and the meeting of relatives greatly “strengthens” both the center’s clients and employees, and if a client is “strengthened”, then he has a growing motivation to change. In their turn, for the center psychologists and client contact persons these meetings represent an opportunity to evaluate the growth of clients see new and positive aspects of their character, successfully using them in further collaboration with clients. This event is also very important to the relatives of convicted persons. The relatives of the convicted persons, who came to this event, have thanked the employees for a well-organized meeting and expressed their satisfaction at the humane attitude and psychological support, which they lack in society, as family members, especially children, are faced with daily intolerance and exclusion.

A serious threat to the security of the place of confinement is the presence of a criminal subculture in the place of confinement, and in particular a difficult situation may arise in the places of confinement where the prison administration supports this subculture. The opportunities that encourage the development of criminal subculture and violence exist in those places of confinement, where the convicts are still placed in old prison facilities, large and spacious rooms (units), where up to one hundred convicts can be present at the same time. The best solution for eliminating criminal subcultures in the places of confinement is the placement of convicted persons in small cells and an agenda consisting of positive and socially-beneficial activities (Zahars, Stivrenieks 2015).

The existence of prisoners’ subculture in Latvian places of confinement cannot be denied. The subculture of prisoners is a complex system of prisoners’ relations with the internal pyramid of power and self-created brutal justice inherited from the Soviet times. The fact of existence of subculture in Latvian places of confinement has also been recognized by the Supreme Court Senate in its judgment as of July 9, 2012, which states that the places of confinement have their own prisoner hierarchy or a caste system.

The Center for drug addicts of Olaine city prison plays an important role in the system of the places of confinement regarding reduction and elimination of the prisoner subculture. The subculture of prisoners does not exist and is not tolerated in the Center for drug addicts, thus the Center for drug addicts reduces the existence of prisoner subculture as such in places of confinement of Latvia.

6. Exclusion from addiction reduction programs

The convicted person is excluded from the addiction reduction program if:
1. the time set for implementing the addiction reduction program has expired;
2. the convicted person has reached the result specified in the re-socialization plan;
3. by convicted person’s application;
4. the convicted person is released from serving the sentence.

In addition to the above, it is useful to point out that the convicted person may be excluded from the addiction reduction program following the decision of the head of the Center for drug addicts if:
1. the convicted person has committed a violation of the sentence serving regime;
2. the convicted person does not fulfill the conditions of the addiction reduction program;
3. due to the state of health the convicted person, cannot participate in the addiction reduction program;
4. the in-depth assessment of the risks and needs of the convicted person found that the convict does not meet any of the conditions of the implemented package of measures.
In view of the above, a convicted person is excluded from the addiction reduction program on the basis of the decision of the head of Olaine city prison and:
1. according to the order of the head of the administration of the places of confinement the convicted person is transferred to another place of confinement to keep serving the sentence of imprisonment;
2. the convicted person is released from the sentence due to the expiry of the term of the sentence imprisonment;
3. the convicted person is released from serving the sentence of imprisonment before the appointed time, with or without electronic surveillance.

According to the statistical data of the administration of the places of confinement in 2017, the following number of persons was sent to the Center for drug addicts: 120 convicts (including 107 men and 13 women). In 2017, at the Center for drug addicts, 38 convicts have completed the “Atlantis” program, and 20 convicts have completed the “Pathfinder” program.

In 2017, 65 convicted persons were excluded from the Center for drug addicts, including: based on the application of the convicted person 12 (including convicts who refused to attend the Center for drug addicts prior to the commencement of the program) 18 of them did not fulfill the program conditions, 12 of them did not meet the conditions of the program, 1 of them violated the sentence execution regime, and 22 of them - due to the achievement of the results of the re-socialization plan.

The paragraph 138. of the Regulations No.23 “The rules of internal order in the division of the place of confinement where the re-socialization program is implemented for the reduction of addiction” of the Cabinet of Ministers as of January 3, 2017 provides that when transferring a convicted person to the place of confinement, who has completed an addiction reduction program in accordance with the results of the re-socialization plan, he is placed separately from convicts, who have not completed the addiction reduction program.

Based on the above, Daugavgriva, Liepaja and Jekabpils prisons were equipped with separate narcotic and psychotropic substance free units, where only those convicted persons are placed, who have successfully completed the addiction reduction program in the Center for drug addicts of Olaine city prison. Such isolation of convicts from the other convicts is done for two reasons: firstly, it is related to the application of the knowledge and skills acquired in addiction reduction programs, and, secondly, it is related to the general safety aspects of these persons. The persons, who have completed the addiction reduction program, after returning to the old prison infrastructure to serve their sentence, with their new behavioral model can have a positive effect on the microclimate and safety of the institution, as they will, with their positive example, create a favorable soil for other prisoners to quit the use of narcotic substances in their future lives.

The authors of the study, having analyzed the legal norms and practice of the Regulations No.23 “The rules of internal order in the division of the place of confinement where the re-socialization program is implemented for the reduction of addiction” of the Cabinet of Ministers as of January 3, 2017, have found that neither the Sentence Execution Code of Latvia, nor Regulations No.23 of the Cabinet of Ministers as of January 3, 2017 stipulate neither the sentence of imprisonment execution regime requirements nor the re-socialization aspects of the newly established prison units. As previously indicated, in 2017, 22 convicted persons were released from the Center for drug addicts of Olaine city prison, either after the expiry of term of imprisonment or before expiry of the term of imprisonment. Most of the persons released from the places of confinement, after serving their main punishment, go to the further disposal of the State Probation Service, to ensure the supervision of probation service. The authors of the study, in their turn, in their analysis of further practice, find that the State Probation Service does not provide the addiction reduction programs to convicted persons, whose offenses were related to the use of narcotic and psychotropic substances, thus, the country does not have uniform systemic approach to risk reduction and prevention of new criminal offenses. Taking into account the above, the authors of the study conclude that in order to achieve the purpose of a punishment and to ensure public safety, it is necessary to organize the execution the sentence of imprisonment in such a way so that the execution of punishment and convicted persons’ re-socialization measures would be coordinated and would interact with each other, thus
contributing to the formation of a socially acceptable behavioral pattern of offenders that would allow them to successfully integrate into society in the future and prevent the recurrence of criminal offenses. The efficiency of addiction reduction programs of prisons will increase if persons, who have completed these programs, after release from prison, will also have special re-socialization support programs that would help the released persons to further restructure their lives, and would contribute to their normal functioning in society without the need for addictive substances.

Conclusions

Drugs are a threat to the security of any state, and they seriously endanger the development of society and cause irreparable harm to the health of the individual. The security of the community, into which persons, who have served their sentence will return, will largely depend on the effectiveness of the addiction reduction program. The security of the community has a positive impact on the existence, well-being and social security of each individual.

Upon the opening of the Center for drug addicts of Olaine city prison of the administration of the places of confinement, the policy of criminal punishments in Latvia and execution of a sentence of imprisonment in respect of convicts, who are addicted to narcotic or psychotropic substances, have undergone significant changes. The purpose of these changes is to reduce and to eliminate to the minimum the risk of addiction of these persons, and to teach them to live with this addiction problem, when returning into society after serving their sentence.

The established Center for drug addicts is a new facility and the addiction reduction programs are also, to a certain extent, still in the process of approbation, as approbation and completion of addiction reduction programs are essential for further successful implementation of these programs. During the process of approbation and completion of the programs it is necessary to find the main aspects of these programs that bring the best results. Negative experience is also an experience. The specific method or program will not always be equally effective for everyone. It is important not to stop at the achieved success and to periodically re-evaluate the achieved results, whether the implemented programs are effective and whether they deliver the desired result today, however, besides that, it is also important to evaluate the potential long-term result. When developing the new and improving the existing addiction reduction programs, the addicts themselves have to be listened to and their opinion must also be taken into account.

The authors of the study point to the fact that, in regard of assessment of the effectiveness of addiction reduction programs, the achieved qualitative indicators are more important than quantitative ones. It is essential for the state to establish a unified, strong, successive system for reducing the narcotic and psychotropic substances addiction in general, based on common principles, methodology and approach. There is no such system in Latvia yet, due to what a rhetorical question arises. What happens to such a person after his release from the place of confinement? Creating a unified state system for reduction of addiction, as one of the most important indicators of program efficiency, it is necessary to provide a feedback between the work done and resources, as well as the achieved practical results, and not just the indicative readings. Modern society expects from execution of a sentence of imprisonment that a person, after being released from the place of confinement, will not commit new offenses, and will be successfully integrated into society and the labor market.

The duty of every country, in respect of addiction reduction issues, is to create its own internal policy and intervention. When developing an addiction reduction policy, it must be based on scientific research and evidence. Unfortunately, it must be acknowledged that in Latvia there is no research on the circulation of narcotic and psychotropic substances in the places of confinement and the effectiveness of various addiction reduction programs. These studies should be included in the agenda of the administration of the places of confinement in the very near future.
References


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TOWARDS SECURITY OF PERFORMANCE: WHISTLEBLOWING AS MANAGEMENT TOOL

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Abstract. This study examines and compares the attitude of management students in Croatia and Slovakia towards whistleblowing in a sample of 121 master students of business ethics at the Faculty of Economics University in Split, Croatia, and 169 master students from University of Bratislava, Slovakia. The three measurement instruments include whistleblowers’ attitudes (3 items), whistleblowing attitudes (2 items) and potential types of whistleblowing reactions (8 items), i.e. external reactions (4 items) and internal reactions (4 items). The results of the study indicated a positive attitude toward whistleblowing and whistleblowers in both student groups. It is also found that Croatian students exhibited more positive attitude towards whistleblowers than Slovakian students. Also, Croatian students showed more proneness to react in a whistleblowing situation – both inside the organization and externally via media. These conclusions suggest that the sense of moral duty to blow the whistle, as well as less fear of the potential consequences, is stronger in Croatian students. The results may be of practical use to managers who can benefit from whistleblowing while keeping in mind that whistleblowing can’t be avoided and that punishing whistleblowers seems to be a bad managerial practice.

Keywords: performance security; whistleblowing; management tool; internal and external whistleblowing; business ethics; ethical business culture


JEL Classification: H 120, K420

1. Introduction

Management should have keen interest in avoiding illegal, immoral or illegitimate practices (in order to avoid corporate scandals) by encouraging employees to report unethical conduct internally¹, so it can be addressed quickly and be prevented from growing into a larger crisis (Mayer at al., 2013, p. 89; Luzgina, 2017; Kordík, Kurilovská, 2017). Also by means of internal reporting, external reporting should be avoided. Reporting about different kind of organizational misconduct is covered by the term of whistleblowing.

Originally the term whistleblowing originates from the practice of English policemen who blew their whistle when they observed a crime. The blowing of a whistle alerted other law enforcement officers and the general

¹ In the great majority of cases employees tell someone within the organization and don’t want to cause any bad publicity for the organization - thus is called internal reporting or internal whistleblowing. When organizations punish or discourage internal reporting, bad practices typically get worse, until someone often motivated by conscience - feels they must notify the press, government agency or other external institutions – this is known as external whistleblowing/reporting, and it can mean serious problems for the organization (http://www.ethicalsystems.org/content/whistleblowing. Available on 13. June 2017.).
public that a crime was being committed (Dasgupta and Tavakoli, 2010). In organizational life, the most commonly accepted definition of whistleblowing is “the disclosure by organization members (former or current) of illegal, immoral and illegitimate practices under the control of their employers to persons and organizations that may be able to effect action” (Near and Miceli, 1985). It represents an ethicist’s version of optical illusion, as from one perspective it is the ultimate act of justice and serving to right a wrong, while from another point of view it is the ultimate breach and a grave betrayal of the organization (Dungan, Waytz and Young, 2015).

Whistleblowing is for businesses, organizations and management an interesting but complex phenomenon that appears to be occurring with greater frequency throughout the world. Although employees are generally reluctant to report internally because they fear retaliation for reporting or believe such efforts will be futile (Mesmer-Magnus and Viswesvaran, 2005), and the same is valid in the case of external reporting – such behavior can have significant positive and negative consequences on organizational and social functioning. In numerous examples, due to external whistleblowers’ activity, the public get acquainted with ethical and legal abuses in business and governmental organizations.

Whistleblowers teach about violation of law, misuse of public funds, falsifying documents, mismanagement, misuse of public facilities, questionable research activities, excessive spending, censorship (Soeken and Soeken, 1986; Kordík, Kurilovská, 2017), unsafe products, corruption, waste of resources (material, financial, human), or ecological misuse (Luzgina, 2017). From whistleblowers, we learn about the “dark side” of business, organizations and management in numerous existing forms. The most common types of wrongdoing which can provoke whistleblower behavior are presented in table 1.

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<thead>
<tr>
<th>Category</th>
<th>Constituents</th>
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<tbody>
<tr>
<td>Stealing</td>
<td>Stealing of funds, stealing of property, accepting bribes/kickbacks, use of an official position for personal benefit, unfair advantage to contractor, and employee abuse of office</td>
</tr>
<tr>
<td>Wasting</td>
<td>Wasting of organizational assets, wasting social benefits</td>
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<tr>
<td>Mismanagement</td>
<td>Management cover-up of poor performance and making false projections of performance</td>
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<tr>
<td>Safety problems</td>
<td>Unsafe or non-compliant products and unsafe working conditions</td>
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<tr>
<td>Sexual harassment</td>
<td>Unwelcome sexual advances/requests for sexual favors and verbal/physical contact of sexual nature</td>
</tr>
<tr>
<td>Unfair discrimination</td>
<td>Discrimination based on race, sex, religion, etc.</td>
</tr>
<tr>
<td>Legal violations</td>
<td>Violations of law, etc.</td>
</tr>
</tbody>
</table>

Source: Dasgupta and Ankit (2010).

Employees are usually among the first to learn about unfair practices and can point them out, therefore use of whistleblowing means active notification of a particular unfair practice that takes place within the workplace (Caha and Urban, 2017). The basic question in evaluating the whistleblowers activity is: “Are whistleblowers betrayers or heroes?” There are two opposite reasoning: whistleblowing can be seen as a negative or a positive activity (Tavakoli et al., 2003).

From the point of view of those who are absolutely loyal to governments, corporations and in general to the organizations which tend to hide exceeding, bypassing or disregarding of laws or standards, whistleblowers are betrayers. In some cultures, social norms say that it is disloyal to the organization and management to blow the whistle, and in contrary conformity and obedience to hierarchy is highly valued. From such a narrow perspective, the wrongdoer is in fact the whistleblower, not his management/other employee who commits any kind of wrongdoing mentioned in Table 1. Such a cultural perspective considers a whistleblower as an “evil” because of his/her “dark motivation” resulting from either intention for revenge against his organization, or having some financial benefits from whistleblowing and perhaps reinstatement of employment (e.g. manipulation of some kind or blackmailing in order to achieve better organizational position). In fact whistleblowers are more likely then inactive to be highly payed, have high job performance, hold supervisory or professional status and have the role responsibility to report wrongdoing and the knowledge of how to do so (http://www. ethicalsystems.org/content/
whistleblowing. Available on 13. June 2017.). From the economic point of view, (external) whistleblowing is an undesirable course of action because it could confound all the marketing and PR efforts and seriously damage the image of the organization (Tavakoli et al., 2003). From the perspective of the second group of people who fully obey and respect the law and social norms, “whistleblowers are heroes.” They are loyal to the organization (to its mission statements, values, goals, etc.) since they are ready to inform and fight against any deviation from the corporation’s own statements and values. Although whistleblowing could be considered as a step against managers or employees, it should not be seen as an act of damaging the corporate image but as an act of courage and support of the organization in a broader perspective. No employee is bound to be loyal towards any individual or group within an organization who violates the mission, goals and values of the organization (Vandekerchove and Commers, 2004.). A whistleblower could be seen as an altruistic person with unselfish concerns about the well-being of others to avoid the wrongdoing which harms the interests of the organization, its consumers, co-workers and the society in general (Arnold and Ponemon, 1991; Vinten, 2000 according Dasgupta and Ankit, 2010). Researcher also found another whistleblower typologies based on goals, motivations and context, i.e. altruist, avenger, organization men, alarmist and bounty hunter type (Heumann at al., 2013).

So, from the business ethics point of view, we can conclude that whistleblowers are dominatedly heroic individuals who, in spite of severe resistance of the organization/society and discouragement (Miceli at al., 2008, Grimsley, 2000, Ridge, 2000) protest against misbehavior in the attempt to fix it. Internal and external whistleblowers have the potential to be teachers (counsellors) and direction-propers in institutional and systemic changes. Although both laws (which prescribe what should not be done) and ethical codes (which prescribe that something that is incorrect should not even be considered) exist when they are violated, whistleblowers help to avoid and fix any socially inappropriate behavior.

Also, although whistleblowers can provoke unpleasantness in the short-term, they support the organizational ideals and better system from a long-term sustainable socio-economic perspective. This is appreciated by multiple multinational enterprises (MNEs). Some of them have established special departments where whistleblowers may share their reports. Others have established ethics codes, which encourage employees to contact the organization’s legal counsel in case of any illegal or unethical activities. In fact, a study of international codes of conduct for MNEs indicates a substantial agreement on the moral duties of MNEs (Tavakoli et al., 2003). Positive attitudes towards whistleblowing may help to predict or explain whistleblowing behavior, and prevent greater organizational damages. Because of the risk they face, whistleblowers should be awarded in the same manner as entrepreneurs are awarded for their business risk taking since they represent a cardinal factor of growth and development of organizations and social systems. This is the suggestion of whistleblowers association in Croatia, i.e. “to the whistleblower the reward in the amount of 10% of the damage which he prevent” (Večernji list, 2014).

Whistleblowers compared with inactive observers tend to have good job performance, to be more highly educated, to hold higher-level or supervisory positions, to score higher on tests of moral reasoning, and to value whistleblowing in the face of unethical behavior (Sims and Keenan, 1998, Near and Miceli; 1996, Miceli and Near; 1984, Brabec, 1984) suggest that they are well educated, dedicated to their job, and good and reliable employees. Many of them are individuals with high working performance who feel invited to report about wrong doing in organization according to their own moral (moral ideology) 2, and in general they believe that they are expected to blow the whistle in case of any misbehavior (Ottensmeyer and McCarty, 1996, 424-434).

Although whistleblowers want to improve the working environment and organizational performance due to their own personal beliefs in good, they regularly experience retaliation and animosity from their supervisors, peers and colleagues (Soaken and Soaken, 1986). They are also usually exposed to psychological pressure in the form of job ostracism (Wu et al., 2012). Courage to tell the unpleasant truth is often dangerous, but in fact it helps to develop the organization in a positive way 3 (Lučić, 2013). Anyway an employee may however face

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2 Today in organizational life, many moral ideologies exist; the most famous are: idealism, relativism, Machiavellianism, golden ethical rule, narcissism, utilitarianism, cost-benefit analysis and altruism (cf. Chudziska-Czupala, 2013).

3 Paraphrased from the great Croatian writers Miroslav Krleža and Ivo Andric (Nobel prize bearer) „Lie is a religion of master and slaves, the truth is religion of strong and free human beings. “
various ethical dilemmas in such a situation, e.g. should be disloyal to their colleagues, line manager, general management or even employer, putting their own position at risk, on the one hand, or it is more important to protect organizational or public interest, on the other hand (cf. Caha and Urban, 2017).

Organizations and management do not react properly when ignoring, lying or even maltreating whistleblowers. Organizational performance and respect of ethics can be improved only when we are aware of drawbacks and weaknesses in our team and its behavior. And in case we don’t have any other measures to recognize any misbehavior, whistleblowers could be one of the solutions. It could be surprising that in spite of very bad treatment of whistleblowers (e.g. repression and retaliation), only in the US there are several hundred thousand whistleblowers in all the spheres of organizational life (Ottensmeyer and McCarty, 1996, 427). So, it is a real and frequent phenomenon which needs to be researched in more detail. In Croatia, there has not been any research about whistleblowing done, although reality shows that it is not a rare phenomenon. The practice in Croatia shows that whistleblowing and whistleblowers are, in reality, condemned; they are treated extremely badly although in many cases they pointed out criminal and unethical acts which could accelerate organizational and social development. One very real and current problem in Croatia is corruption and theft. On 28 October 2013, a bill concerning protection of denunciators of anomalies (i.e. whistleblowers protection) was introduced in Croatia. The intention of this bill was to discourage the management from revengeful behavior against denunciators of anomalies, change the “climate of fear”, stimulate socially responsible behavior, change the negative perception of whistleblowers, narrow the space for corruption and make a contribution in building a more righteous society (suggestion of Dr. Dražen Gorjanski).

To which extent are whistleblowers important in illuminating criminal acts, e.g. corruption, we may see in the research about corruption. Due to whistleblowing activities, 43% of corruption was uncovered whilst due to the police investigations this figure was just about 2-3%. Whistleblowers are also extremely efficient in drawing attention to very different anomalies. When informing about such anomalies, there are, on average, 20 other active individuals (potential but inactive whistleblowers) who will follow them. Thus, we may consider it as an evidence of an economic adequacy of whistleblowing in battle against corruption when 1$ invested into this purpose (whistleblowers support) results in 8$ yield (prevented damage) (Večernji list, 2014), (Vasilova, 2015), (Kabat, Filip and Filipová, 2016). Also according Global economic survey (2016) 23% of all the respondents that had faced serious economic crime stated that the behavior had been revealed by means of a notification system (an anonymous line, helpline, etc.) or by notification inside the organization. Similarly, a survey conducted by KPMG (2008) showed that 19% of the 568 analyzed cases of economic crime were revealed by whistleblowers (Caha and Urban, 2017). There are many ways to understand why CEOs or supervisors in general do not accept or even sanction whistleblowers. Considering different power related frameworks, whistleblowing can be understood as a two-way process, where reporting represents an attempt to elevate the whistleblower’s own internal power over a dominant coalition in the organization and thus singular or repeated negative and retaliatory actions can be experienced within the organization against such initiative (Bjørkelo, 2013).

To achieve a higher level of satisfaction of organizational and social interests, we pursued research on attitudes of the most propulsive population, i.e. Master students of management who may in the future restructure the social attitudes toward whistleblowing. This paper deals with exploration of different attitudes toward whistleblowing among master students of management in Croatia and Slovakia, and according to the obtained results, we propose measures to create such an ethical climate which will make external whistleblowing unnecessary. The research questions (problems) are defined as follows:

• What is the actual attitude of students of management towards whistleblowers, whistleblowing, and their potential whistleblowers’ reaction?
• What are the differences in the students’ attitude towards whistleblowing and whistleblowers, potential whistleblowers’ reaction with regard to gender?
• What are the differences in the students’ attitude towards whistleblowing and whistleblowers, potential whistleblowers’ reaction with regard to organizational membership?
2. Methodology

Measurement instruments

The research first studied attitudes to whistleblowing of Slovakian and Croatian students and then performed a comparative analysis of the two groups. To understand the status quo and provide conclusions about potential future attitudes toward whistleblowing, it is used a questionnaire with 13 items divided into four areas of research interest:
1. Attitudes to whistleblowers - 3 items;
2. Attitudes to whistleblowing (ethical correctness) - 2 items;
3. Whistleblowers’ reaction - outside the organization (external) - 4 items;
4. Whistleblowers’ reaction - inside the organization (internal) - 4 items.

The questionnaire used a 5 degree Likert-type response format according to the following scores:
- To measure attitudes toward whistleblowers and whistleblowing, we used the following response scale: 1. I strongly disagree; 2. I disagree; 3. I do not agree nor disagree; I agree; 5. I strongly agree.
- To measure the whistleblowers’ reaction, we used the following response scale: I will never act in such a way; 2. I will not act in such a way; 3. I am not sure if I would act in such a way; 4. I believe I would act in such a way; 5. I am sure that I will act in such a way.

The attitude questionnaire described some ethical attitudes about whistleblowers and the whistleblowing phenomenon. The reaction questionnaire described reactions in the whistleblowing situations in terms of what would the interviewee react like (external and/or internal) if he had the intention to “blow into the whistle”. The original questionnaire is provided in the appendix. The comparison of metric characteristics obtained on both the Slovakian (N=169) and Croatian student sample (N=121) are provided in table 1.

Table 2 suggests that all the tested variables are sufficiently reliable (Cronbach alpha score equal or greater than 0.60). In Slovakian sample, external whistleblowers’ reaction has been determined as of the lowest reliability (Alpha=0.62), however according to DeVellis (1991)⁴, it can still be treated as acceptably reliable, while in Croatian students, with the same Cronbach Alpha score, attitude to whistleblowers has emerged as the least reliable item. Attitude to whistleblowing has shown to be the most reliable variable in both samples, with Cronbach Alpha result of 0.81 and 0.83 respectively for Slovakian and Croatian students, which is categorized as excellent reliability. In both students’ samples, attitude towards whistleblowing in general has been more stable than attitude to whistleblowers. The rest of the summary variables’ Cronbach alpha score suggests their reliability is very good.

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Slovakian sample</th>
<th>Croatian sample</th>
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<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. deviation</td>
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<tr>
<td>Attitude to whistleblowers (N=3 items)</td>
<td>3.44</td>
<td>0.80</td>
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<td>Attitude to whistleblowing (N=2 items)</td>
<td>3.71</td>
<td>0.90</td>
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<tr>
<td>Total attitude to whistleblowers and whistleblowing (N=5 items)</td>
<td>3.55</td>
<td>0.72</td>
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<tr>
<td>External whistleblowers’ reaction (N=4 items)</td>
<td>2.66</td>
<td>0.89</td>
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<tr>
<td>Internal whistleblowers’ reaction (N=4 items)</td>
<td>3.16</td>
<td>0.88</td>
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<tr>
<td>Total (external and internal) whistleblowers’ reaction (N=8 items)</td>
<td>2.91</td>
<td>0.70</td>
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<tr>
<td>Total scale (N=13 items)</td>
<td>3.16</td>
<td>0.60</td>
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Source: Research results

⁴ According DeVellis (1991) the Cronbach alpha reliability should be interpreted as follow: <0,60=not acceptable; 0,60-0,65=borderline (can be treated as acceptable); 0,65-0,70=acceptable; 0,70-0,80=very good; 0,80-0,90=excellent; >0,90=the scale should be shortened.
The results presented above suggest that the Slovakian interviewees are more consistent in their attitude towards whistleblowing as a phenomenon (alpha=0.81) than to the individual whistleblowers (alpha=0.71). The same verdict can be noticed in the Croatian sample, which are also significantly more consistent in their attitude to whistleblowing in general (alpha=0.83) than to whistleblowers as individuals (alpha=0.62). They also demonstrate that the interviewees from both samples are significantly more consistent in the internal whistleblower’s actions (alpha=0.78-0.80) they would have taken if they were in a situation to blow the whistle than the reaction outside the organization (alpha=0.71-0.74).

Another noticeable difference between the two student samples can be marked in external whistleblowers’ reaction, as Croatian interviewees are considerably more consistent in their attitudes (alpha=0.79) than their Slovakian colleagues (alpha=0.62). Tables 3 and 4 display the intercorrelations matrix between each of the 13 items in the questionnaire for both samples to inspect whether any of the items are overlapping.

Table 3. Intercorrelation between the questionnaire items for the Slovakian student sample

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Source: Research results

Table 4. Intercorrelation between the questionnaire items for the Croatian student sample

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<td>11</td>
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<td>.012</td>
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<td>.268</td>
<td>.013</td>
<td>.021</td>
<td>.023</td>
<td>.073</td>
<td>.163</td>
<td>.242</td>
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<td>13</td>
<td>.246</td>
<td>.034</td>
<td>.085</td>
<td>.072</td>
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<td>.022</td>
<td>.104</td>
<td>.071</td>
<td>.048</td>
<td>.451</td>
<td>.449</td>
<td>.657</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Research results
All the items have shown relatively low to medium intercorrelations which implies they can be considered pure enough to be used in achieving the objective of the research. Concretely the most of highest inter-correlations between items are below $r=0.60$, only two are above (i.e. $r=0.676$ and $r=0.706$, inter-correlations between the item 4 and 5 in the both samples - Slovak and Croatian sample respectively), so there is enough unexplained variance to treat each of measured item as enough independent, therefore such overlapping can be treated as tolerable.

Subjects

The research on Croatian students was conducted in mid-December 2014, on a sample of 121 full time students of management during the first year of their master’s degree studies (fourth year of integral study) at the Faculty of Economics, University of Split, Croatia (Bogdanović and Tyll, 2016). The students were attending the mandatory course of Business Ethics. From a total of 121 subjects, 84 were female and 37 male, with an age spread from 22 to 48 years (22-25 years 85%; 26-29 years 9.2%; and 30-48 years 5.8%). 63 of them had work experience, while 58 had not. 5 students were married, 116 were single.

The research on Slovakian sample was performed in Jun 20165 on a sample of 169 students of management during the first year of their master’s degree studies at the School of Economics, and Management in Public Administration in Bratislava of the Slovak Republic, of which 117 were female and 52 were male students, with an age spread from 21 to 59 years old (21-25 years 67.4%; 26-29 years 8.9%; 30-40 years 17.8%; and 41-59 years 5.9%). 140 students had work experience and 29 didn’t have any work experience. 33 students were married, while the rest 136 were single or unmarried.

Procedure

Prior to the research, all the interviewed students were instructed about and familiarized with the type, as well as the objective of the conducted research. They were asked for their approval to be included in this research. Only the students who accorded to participate were included into the research. The questionnaires were filled out anonymously within approximately five minutes. The collected data was processed by IBM SPSS statistical software package.

3. Results

General remarks on basic descriptive results for all the items

The basic descriptive statistics, providing answers about crucial questions on whistleblowing and whistleblowers for both Slovakian and Croatian students, is presented in table 5.

The table indicates existence of a generally positive attitude to whistleblowing (items 4 and 5; $M > 3.50$) in both samples. This conclusion is strengthened by the fact that mode for both items is positive (Mode $\geq 4$). Attitudes towards whistleblowers (items 1-3) and their internal reactions (items 10-13) are dominantly positive (Mode$\geq=3$) in both student samples, with Slovakian students grading all the items regarding attitude to individual whistleblowers slightly lower than their Croatian colleagues.

This difference can be explained by the bad experiences about the consequences of the whistleblowers suffered in publicly best-known cases of whistleblowing as well as negative media attention around it and difficulties in finding a new job afterwards, which seems to have influenced the Slovaks stronger than the Croatian students.

---

5 During the teaching and research stay in Slovakia in summer semester 2015./2016. academic year one of the author.
Attitude to external whistleblowers’ reactions (items 6-9) is even less positive, as it is between neutral (Mode=3 for items 6 and 8) and slightly negative (Mode=2 for item 9) for Slovakian sample, and neutral for Croatian students, with modes being dominantly neutral (Mode=3) on both sides. These results can also be due to negative experiences of individual whistleblowers in well-known public whistleblowing cases, as well as the negative repercussions linked to it.

Table 5. Basic descriptive statistics for all the questionnaire items on both Slovakian and Croatian student sample

<table>
<thead>
<tr>
<th>Item</th>
<th>Slovakian sample</th>
<th>Croatian sample</th>
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<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Deviation</td>
</tr>
<tr>
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<td>3.50</td>
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<td>Eight</td>
<td>2.43</td>
<td>0.937</td>
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<tr>
<td>Nine</td>
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<td>1.912</td>
</tr>
<tr>
<td>Ten</td>
<td>3.51</td>
<td>1.064</td>
</tr>
<tr>
<td>Eleven</td>
<td>2.53</td>
<td>1.186</td>
</tr>
<tr>
<td>Twelve</td>
<td>3.15</td>
<td>1.073</td>
</tr>
<tr>
<td>Thirteen</td>
<td>3.43</td>
<td>1.174</td>
</tr>
</tbody>
</table>

Source: Research results

In general, it can be concluded that the attitude toward whistleblowers and whistleblowing is more positive than the potential reaction of the interviewees. It suggests that the moral belief, in case of whistleblowing, is not strong enough to encourage whistleblowing behavior, due to both Slovakian and Croatian overall experience that whistleblowers are punished without exemptions, and the perception that such efforts will be futile (Mesmer-Magnus and Viswesvaran, 2005). In fact the summary of personal factors that inhibit speaking up can be attributed to the four categories of reasons: a) fear of repraisal/retaliation, b) concern that nothing will be done, c) lack of self-efficacy (the idea that one has confidence/ability to speak up), d) lack of awareness that the behavior is wrong (http://www.ethicalsystems.org/content/whistleblowing. Available on 13. 06. 2017.).

**Attitude to whistleblowers, whistleblowing and potential whistleblowers’ reaction**

Evaluation of students’ attitude towards whistleblowing, whistleblowers, potential external and internal reaction is actualized via basic descriptive statistics for the mentioned variables, presented in the table 6.

Table 6. Basic descriptive statistics for key whistleblowing variables of Slovakian and Croatian students

<table>
<thead>
<tr>
<th>Variable</th>
<th>Slovakian sample</th>
<th>Croatian sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Mode</td>
</tr>
<tr>
<td>1. Total attitude</td>
<td>3.55</td>
<td>3.80</td>
</tr>
<tr>
<td>2. Total reaction</td>
<td>2.91</td>
<td>3.00</td>
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<tr>
<td>3. Whistleblowers’ attitude</td>
<td>3.44</td>
<td>3.33</td>
</tr>
<tr>
<td>4. Whistleblowing attitude</td>
<td>3.71</td>
<td>4.00</td>
</tr>
<tr>
<td>5. Reaction external</td>
<td>2.66</td>
<td>3.00</td>
</tr>
<tr>
<td>6. Reaction internal</td>
<td>3.15</td>
<td>3.50</td>
</tr>
</tbody>
</table>

Source: Research results
The general (total) attitude to whistleblowing is mostly positive in both samples (Slovakian students: M=3.55, s=0.72; Croatian students: M=3.77, s=0.75) with mode values of 3.80 and 3.40 for Slovakian and Croatian interviewees respectively. Therefore the both management student samples perceive the importance of whistleblowing and whistleblowers. Substantial difference can be noticed between Slovakian students’ attitude to whistleblowing (M=3.71, s=0.90) as a phenomenon and attitude to whistleblowers as individuals (M=3.44, s=0.80). Attitude towards whistleblowing in general is more positive and most of the students who have taken part in the research agree that blowing the whistle is not only a moral right but as well a moral duty of every individual, while they are mostly neutral regarding the role and importance of whistleblowers.

This outcome by the Slovak sample has its possible explanation in the fact that whistleblowers as humans can have different motivations and goals which are not always ethical and quite appropriate. E.g. Heumann at al. 2013 explained whistleblowers with revenge and retribution motives, also bounty hunter motive which want to make money by such an activity. Perhaps by some number of examinees in the Slovak sample perceive “dark side” motivation of some whistleblowers so they are perceived less appropriate than the opinion about abstract phenomenon of whistleblowing.

Croats, on the other hand, do not differ significantly in points of view regarding these two items. Both student samples express sensibly more positive attitude to internal reactions on whistleblowing situations (Slovakian sample: M=3.15, s=0.88; Croatian sample: M=3.40, s=0.98) than actions outside of the organization (Slovakian sample: M=2.66, s=0.89; Croatian sample: M=3.16, s=0.85).

This is according the results of Indian MBA students (N=237) from two Indian business school where respondents reported significantly higher internal whistleblowing intentions than external whistleblowing intention (Dhamija and Rai, 2017). Those authors also found bad consequences for the company were positively correlated with internal whistleblowing intentions, and that collectivism was positively related with internal whistleblowing intention.

It is interesting that both student groups place external whistleblowing reaction at the lowest grade, which implicates that, in spite of generally positive attitudes towards both whistleblowing as a phenomenon and individual whistleblowers, they show low intention to “blow the whistle outside the organization”, but also less propensity to react internally in their own organization. Once again, this affinity can be a result of specific cultural socialization and past experiences that blowing the whistle does not pay off and the whistleblowers atone for their actions, although being both ethically and legally justified.

Such results can be partially explained by specific personality by management students population where is to find some higher Machiavellianism e.g. on Croatian sample (Bogdanović and Cingula, 2015), and also researchers from Aarhus University (Denmark) found that students of economics and management have personalities with higher drive for social domination and power (index.hr, 03.05.2017. according Independent).

So higher Machiavellianism can be expected to be found in economics and management student population through the European area. Namely it is found that high Machs are expected to be less likely to report wrongdoing (Dalton and Rath, 2013). According those researcher on 116 MBA students they found that Machiavellianism is negatively related to whistleblowing.

**Answer on the second whistleblowing problem**

The second question of the research is concerned about the students’ attitude towards whistleblowing, whistleblowers and potential whistleblowers’ reaction with regard to gender. The analysis is carried through finding the statistical differences in all the variables between male and female subjects, that is by performing ANOVA (analysis of variance). Table 7 provides the results of the ANOVA test for both interviewed samples, Slovakian and Croatian students.
Table 7. Statistical differences in different whistleblowing attitudes with regard to gender
(0-female; 1-male) ANOVA of Slovakian and Croatian students

<table>
<thead>
<tr>
<th>Variable</th>
<th>Slovakian sample</th>
<th>Croatian sample</th>
</tr>
</thead>
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<td></td>
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<td>Reaction external</td>
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<tr>
<td>Total reaction</td>
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<td>.451</td>
</tr>
</tbody>
</table>

Source: Research results. Comment: Significant statistical differences are bolded.

The presented results suggest that statistically significant differences between male and female Slovakian interviewees do not exist in any of the inspected variables. These results reveal that Slovakian student population does not embrace the traditional differences between men and women and their role in business life, which includes attitudes to whistleblowing, whistleblowers and potential reactions in such a situation. On contrary, Croatian students have demonstrated four statistically significant differences (p ≤ 0.01) between male and female interviewees:

1. Statistically significant difference was identified between female and male participants in question twelve ("I will report to top management or to general management"), where female interviewees (M=3.54, s=1.11) exhibited greater proneness to report to general management (M=2.84, s=1.44).

2. In question 13 ("I will report firstly to my direct supervisor"), female students (M=3.63, s=1.16) were more likely to report to the direct supervisor than their male colleagues (M=2.84, s=1.40).

3. Another statistically significant difference was found in the variable of internal whistleblowing reaction, as female interviewees (M=3.56, s=0.80) are more likely to internally report (on any of the four ways described in the questionnaire under items 10-13) than male participants (M=3.02, s=1.09).

4. Statistically significant difference was also found in total whistleblowing reaction between male and female participants, as female interviewees (M=3.38, s=0.65) have shown to be more likely to express any whistleblowing reaction than male interviewees (M=3.03, s=0.59).

These differences reveal that female students in Croatia have more confidence in the management on all levels, and are also more likely to blow the whistle. This could potentially express a substantial distinction in Croatian cultural factors compared to Slovakian, where no such differences between the genders were proved, because
one explanation for the Croatian students’ results could emerge from greater social consequences of whistleblowing in perceptions of male interviewees as they are expected to provide for their families, which could be jeopardized by losing job in case of whistleblowing.

**Answer on the third whistleblowing problem**

The third research problem focuses on the differences in attitudes to whistleblowing, whistleblowers and potential whistleblowers’ reaction between students with regard to organizational membership. As well as the previous problem, this is also realized through ANOVA testing. The results are presented in table 8.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Slovakian sample</th>
<th>Czech sample</th>
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</thead>
<tbody>
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<td></td>
<td>F</td>
<td>p-value</td>
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<td>.533</td>
<td>.466</td>
</tr>
<tr>
<td>Two</td>
<td>2.204</td>
<td>.140</td>
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<td>Three</td>
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<td>.589</td>
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<td>Four</td>
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<td>.667</td>
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<td>Five</td>
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<td>Eight</td>
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<td>.610</td>
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<td>Ten</td>
<td>.042</td>
<td>.838</td>
</tr>
<tr>
<td>Eleven</td>
<td>2.273</td>
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<tr>
<td>Twelve</td>
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<td>.746</td>
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<tr>
<td>Thirteen</td>
<td>.070</td>
<td>.792</td>
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<tr>
<td>Whistleblowers’ attitude</td>
<td>1.339</td>
<td>.249</td>
</tr>
<tr>
<td>Whistleblowing attitude</td>
<td>.905</td>
<td>.343</td>
</tr>
<tr>
<td>Total attitude</td>
<td>1.555</td>
<td>.214</td>
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<tr>
<td>Reaction external</td>
<td>.298</td>
<td>.586</td>
</tr>
<tr>
<td>Reaction internal</td>
<td>.337</td>
<td>.562</td>
</tr>
<tr>
<td>Total reaction</td>
<td>.000</td>
<td>.987</td>
</tr>
</tbody>
</table>

*Source*: Research results. Comment: Significant statistical differences are bolded.

The results of the analysis on Slovakian sample show there are no statistically significant differences between students who work beyond study, and those who do not, in any of the tested variables. These conclusions suggest that organizational membership does not alter the perception towards whistleblowing, whistleblowers nor the potential whistleblowers’ reaction of the interviewed students.

However, on Croatian student sample, two statistically significant (p<0.05) and one borderline (p=0.067) differences have been noticed:

1. Statistically significant difference was found in question 3 (“Whistleblowers are good for public interest”) between participants regarding organizational membership, as those who were members of an organization (M=3.94, s=0.96) were more likely to believe whistleblowing is good for the society compared to those who had no work experience (M=3.49, s=1.08), where p<0.05. This implies work experience makes a difference in perception of impact of whistleblowing on social interest and well-being.
Another statistically significant difference was identified between the interviewees who were and those who weren’t organizational members in question 7 (“I will report to the authority outside the organization”). The results suggest that organizational participants (M=3.54, s=1.00) are more likely to whistle outside the organization than the interviewees with no work experience (M=3.12, s=0.97) where p<0.05. This is possible so because organizations where students are working do not allow/have negative attitude on internal whistleblowing, or simply there is missing ethical leadership and co-worker ethical behaviour. Namely, when supervisory ethical leadership and co-worker ethical behaviour are both low the level of reporting should be lowest because multiple social actors are communicating that being ethical is less important (Mayer at al, 2013, 90). Because “non working” students have no such organizational experience, those differences becomes obvious.

Statistical significance of the difference between interviewees who were organizational members compared to those who were not was defined as borderline (p=0.067) in question 6 (“I will use the information channels outside the organization”). It implies that organizational interviewees (M=3.35, s=1.12) are more likely to whistle from the outside information channels than their no work experience counterparts (M=3.00, s=0.94). Those results and difference can be explained in the same manner as in point (2).

These differences help us in conclusion that being part of an organization makes the Croatian individuals more aware about the social usefulness of whistleblowing and prone to use external information sources to blow the whistle.

4. Comparison of Croatian and Slovakian students’ attitude to whistleblowing

Comparison of general remarks on basic descriptive results for all the items

In the following section, the results of the earlier described research conducted by Bogdanović and Tyll (2016), on a sample of 121 students of management on University of Split, Croatia, will be statistically compared to the study on Slovakian students which was also presented above in the paper and descriptively explained.

While Croatian students demonstrated almost the same positive attitudes towards both whistleblowing (M=3,75) as a phenomenon and individual whistleblowers (M=3,79), Slovakian students were only positive regarding whistleblowing in general (M=3,71), while neutral to whistleblowers (M=3,44). This could lead to a conclusion that Croatian students have more developed sense of morality and duty to act ethically, but of course this should be tested.

Attitude to potential reaction on whistleblowing situation inside the organization is dominantly neutral in both the Slovakian and Croatian interviewees (M=3,15 vs. M=3,40). On the other hand, external reaction attitude is between neutral and negative in Slovakian sample (M=2,66), while neutral in Croatian students (M=3,16). These results could possibly suggest that the climate around public whistleblowing, as well as consequences for the whistleblowers, has been more serious and negative in Slovakia, so the students would hesitate to inform the general public and the media.

Comparison of attitudes to whistleblowers, whistleblowing, and potential whistleblowers reaction between Slovak and Croatian sample

To determine whether there are significant differences in the two student samples, a simple t-test was used to inspect existence of statistically significant differences in means of the two groups. Variables chosen for the comparison were summary variables – attitude to whistleblowers, attitude toward whistleblowing and total attitude, as well as potential internal, external and total whistleblowers’ reaction. The values of these parameters for both Slovakian and Croatian student sample, and the results of the test, are shown in table 9:
Table 9. Results of two-sample t-test for equal means on Slovakian and Croatian student sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>Slovakian students Mean</th>
<th>Std. deviation</th>
<th>Croatian students Mean</th>
<th>Std. deviation</th>
<th>t-test</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total attitude</td>
<td>3.55</td>
<td>0.72</td>
<td>3.77</td>
<td>0.75</td>
<td>-2.504</td>
<td>.013</td>
</tr>
<tr>
<td>Total reaction</td>
<td>2.91</td>
<td>0.70</td>
<td>3.28</td>
<td>0.69</td>
<td>-4.476</td>
<td>.000</td>
</tr>
<tr>
<td>Attitude to whistleblowers</td>
<td>3.44</td>
<td>0.80</td>
<td>3.75</td>
<td>0.78</td>
<td>-3.302</td>
<td>.001</td>
</tr>
<tr>
<td>Attitude to whistleblowing</td>
<td>3.71</td>
<td>0.90</td>
<td>3.79</td>
<td>0.95</td>
<td>-0.723</td>
<td>.471</td>
</tr>
<tr>
<td>External reaction</td>
<td>2.66</td>
<td>0.89</td>
<td>3.16</td>
<td>0.85</td>
<td>4.843</td>
<td>.000</td>
</tr>
<tr>
<td>Internal reaction</td>
<td>3.15</td>
<td>0.88</td>
<td>3.40</td>
<td>0.98</td>
<td>2.234</td>
<td>.026</td>
</tr>
</tbody>
</table>

Source: Research results. Comment: Significant statistical differences are bolded.

The results of the two-sample t-test suggest existence of five statistically significant differences between Slovakian and Croatian student groups:

1. Croatian students (M=3.77, s=0.75) have generally more positive attitude toward whistleblowing and whistleblowers than their Slovakian colleagues (M=3.55, s=0.72), p<0.05.
2. Croatian students (M=3.28, s=0.69) are substantially more likely to react, either internally or externally, in a whistleblowing situation than the Slovakian students (M=2.91, s=0.70), p<0.01.
3. Croatian interviewees have shown more positive attitude (M=3.75, s=0.78) toward individual whistleblowers than the Slovakian ones (M=3.44, s=0.80), p<0.01.
4. Potential reaction outside of the organization is significantly more likely to happen in case a Croatian participant were to be in a whistleblowing situation (M=3.16, s=0.85) than in case of their Slovakian counterparts (M=2.66, s=0.89), p<0.05.
5. Croatian participants have also been found more likely to act inside of their organization if they were in a position to blow the whistle.

Possible causes and explanations for the identified statistically significant differences have been elaborated in the above part of the paper which focuses on general remarks and summary attitudes to whistleblowing, whistleblowing and potential reaction of Slovakian and Croatian students’ samples.

5. General discussion and research limitations

The most common way of interpreting the differences in attitudes of the two interviewed student samples would be identifying them as mainly cultural. Two most widely studied types of cultural orientation are individualism and collectivism, which are characterized by how much a person stresses his or her own goals, or the goals of his or her group (Triandis, 1995 according to Park et al. 2008). According to the research of Dhamija and Rai, 2017, on 237 MBA students in India it is found that collectivism is positively related with internal whistleblowing intention. These two dimensions’ influence on whistleblowing can be seen through general collectivist cultures’ disapproval of whistleblowing, since it disrupts the unity of an organization (Brody, Coulter and Mihalek, 1998 according Park et al., 2008). In other words, variability in cultural norms which emphasizes or de-emphasizes loyalty affects the likelihood of whistleblowing (Park et al., 2008).

The results of the research would thus suggest that the Slovakian business community has stronger collectivism than Croatian, which would explain their less positive attitude towards whistleblowers and more positive attitude towards whistleblowing. However, this is contrary to statistically indifferent attitudes to whistleblowing
as a phenomenon, which is virtually the same in the both student groups. This leads us to a conclusion that the differences in the attitudes towards whistleblowers, as well as potential internal, external and total reactions are not caused by diverse degrees of collectivism, but principally as an effect of the consequences and bad experiences of the individual whistleblowers in the publicly-known whistleblowing cases.

This research showed that even students are not quite free from the social fear of doing whistleblowing, but such freedom of future employee’s and executives is very important for future organization and management development. Whistleblowers gives clear signal about the credibility of ethical declaration in organization (Hansmann, 2017), that potentially unethical behavior exist, and potentially unethical behavior of company management (today students, tomorrow executives) leads to the degradation of the ethical behavior of employees and whole organization. Therefore is important to know what future employees feel about the ethical phenomenon of whistleblowing and whistleblowers and potential ways of reporting.

Use of whistleblowing is important ethical organizational management tool - i.e. one of the most important tools for making disclosures and preventing fraudulent and corruptive practices in public administration and in public and private companies. If employees are not afraid to report potential fears and problems, if organization does not tolerate any kind of retaliatory measures against anyone who in good faith reports an alleged breach of obligations or provides any information in relation to an investigation of an alleged breach, and if organization will investigate and punish all potentially measures taken against anyone who reports incorrect behavior (i.e. against whistleblowers), than we can have full benefit of whistleblowing activity (Caha and Urban, 2017). Because humans are valuable assets (humans has infinite value, and their potential is limitless) it is important to treat them with care and dignity (Sikula, 1996, p. 60), whistleblowers are here no exemptions. Therefore if whistleblowers are seen as a valuable element of internal organizational self-control and treated as engaged employees who can secure valuable information and solutions for managerial problems, they could improve both their organization and management.

The strength of the results of the conducted research have methodological limitations, as the students who were chosen as participants may not be representative of the population of the two countries. Another restraint emerges from the self-reported questionnaires which, although anonymous, allow to students to present their attitudes and reactions rather how they would like them to be perceived by the others than how they really are.

6. Conclusion

The objective of the research was to measure the attitudes and potential reaction in whistleblowing scenarios of Croatian and Slovakian management students, who represent the future executive population, as well as comparative analysis of the two student samples.

Attitudes towards both whistleblowing as a phenomenon and individual whistleblowers are generally positive in both Slovakian and Croatian participants, with Croatian students’ attitudes to whistleblowers has been statistically proven to be significantly more positive. Nonetheless, Croatian students have expressed virtually no differences in their attitudes to whistleblowing as a phenomenon and individual whistleblowers, while their Slovakian colleagues are considerably fonder towards general whistleblowing than the persons who blew the whistle. Potential reason for such result could be that Slovakian participants witnessed bad consequences for the individuals who took part in public whistleblowing affairs and the negative impact it had on the lives of the whistleblowers in question caused fear.

Croatian interviewees have also shown to be significantly more prone to react in a whistleblowing situation – both inside the organization and externally via media. These results suggest that the sense of moral duty to blow the whistle, as well as less fear of the potential consequences, is stronger in Croatian students due to cultural differences and moral assets.

The research has shown that both Slovakian and Croatian management students as future executives and lead-
ers value whistleblowing as a positive phenomenon and have general propensity to react if they were to find themselves in such a situation. These remarks, in spite of negative experiences and consequences of individuals in famous public whistleblowing cases, imply that whistleblowing cannot be stopped by repressive management methods of punishing whistleblowers. The righteous course of action should be creating a climate in which wrongdoing would be strongly resented and whistleblowers would be deemed as valuable and engaged employees who help in solving managerial problems of the organization. Also it is to propose the creation of supervisory ethical leadership and ethical coworkers (by means of socialization) which would send consistent message supporting ethical behavior and of course internal reporting. This way, organizations could benefit from the fact that most of the whistleblowers are prone to active engagement in correcting wrongdoing, and thus adding more value to their home organizations.

References


www. index.hr. (Croatian news e-portal). Available on 03. May 2017. (research cited from Independant) “Ako ste studirali na ovim fakultetima velika je vjerojatnost da ste pishopat” ["If you have studied on this faculties there is a large possibility you are psychopath"]

Večernji list (Croatian newspaper) 2014. “Zviždaču nagrada 10% od iznosa štete koju je spriječio” [“To the whistleblower the reward in the amount of 10% of the damage which he prevent”]. Retrieved on February 20, 2016 from http://www.vecernji.hr/hrvatska/zvizdacu-nagrada-10-od-iznosa-stete-koju-je-sprijecio-920337

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APPENDIX

TOTAL - 13 items

**Attitudes towards whistleblowers**
1. Whistleblowers prevent greater damage to the organization.
2. Whistleblowers are the corruption control.
3. Whistleblowers are good for public interest.

**Attitudes towards whistleblowing (ethical correctness)**
4. To blow the whistle is the moral duty of every employee.
5. To blow the whistle is morally correct.

**Whistleblowers’ reaction – outside the organization (external)**
6. I will use the information channels outside the organization.
7. I will report to the authority outside the organization.
8. I will report to NGOs (non-governmental organizations).
9. I will report to public using mass media.

**Whistleblowers’ reaction – inside the organization (internal)**
10. I will report the person of my trust in the organization.
11. I will use internal organizational e-mail to report.
12. I will report to the top management or general management.
13. I will report to my direct supervisor.
PUBLIC PERCEPTIONS OF INSTITUTIONAL RESPONSIBILITY IN CLIMATE CHANGE RISK IN BALTIC NORDIC COUNTRIES

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Abstract. Tackling climate change requires collective, cross-borders actions and local solutions for mitigation measures. Variety of actors are involved in climate change adaptation and mitigation, ranging from local communities to the global supranational institutions. People tend to perceive individual action as failing to cope with climate change (e.g. outlined in Lorenzoni and Pidgeon, 2006) and therefore ascribe high responsibility to the institutional level. This article will analyze how the public in Baltic – Nordic countries perceive the institutional responsibilities in climate change adaptation and mitigation. This article is based on data of Special Eurobarometer (459), conducted in 2017 and the questions analyzed in this article are related to concerns about climate change and the perception of institutional responsibilities in tackling climate change (institutions: national governments, European Union, business and industry, regional and local authorities; and environmental groups). The local, national and global institutions are perceived as having different responsibilities and impacts in tackling climate change. Also, the perceptions of institutional and individual responsibility varies across the countries. Results indicate that climate change is perceived as one of the top three most serious global issues in Baltic – Nordic countries as well as the concern about climate change in those countries is increasing. Regarding public perceptions of institutional responsibility related to climate change risks, most people in EU member states indicate national governments as having highest responsibility. However, there are significant differences comparing the perception of public in Nordic and Baltic States.

Keywords: risk perception; climate change; Baltic-Nordic countries; institutional responsibility; Eurobarometer


1. Introduction

Climate change is one of the most serious issues in the contemporary world. Increases in average global and oceans temperature, melting glaciers, growing acidity in oceans and other factors make climate change a more global issue than ever before. The need of collaborative actions between nations leads to need of countries around the globe to correspond to new challenges and implement various methods to mitigate it. Climate change can cause wide-ranging effects not only to the environment but also to socio-economic and related sectors. So, the need to tackle these effects becomes a top-priority issue in national and international strategies and affects all the other sectors.

Concerns about anthropogenic causes on climate change lead to apprehension that it becomes the most serious threat for all human kind and the need to moderate these effects is urgent (Hansen, et. al 2008). Many international agreements have been signed on global level towards the need of tackling climate change The United Nations Framework Convention on Climate Change (UNFCCC), agreed in 1992; the Kyoto protocol
was ratified by 192 of the UNFCCC Parties on 1997; the Paris Agreement adopted by all UNFCCC Parties in December 2015. All these agreements lead to international efforts to fight climate change, but the regional and national agreements based on these global goals are as well very important. The dissemination of responsibility across the governments and later to the municipality level makes the global goals targetable at local levels by implementing sets of rules for stakeholders and individuals.

Three Nordic countries, which are part of the European Union (Sweden, Denmark and Finland) could be considered as the most advanced countries by tackling climate change. Sweden aims to become one of the first fossil-free nations in the world. Denmark has cut its greenhouse gas emissions by more than 27% since 1990 and expects to achieve a 37% reduction by 2020. Finland tries to implement bio economy, which aims to make Finland into a sustainable low carbon society based on the resource efficient use of renewable biomass (Bird, 2017). All these countries applied most of the global strategies into national law systems, which let them to institutionalize the concern at administrative level.

The Baltic states – Lithuania, Latvia and Estonia issued some documents concerning climate change: The Law on Financial Instruments for Climate Change Management by Lithuania’s government published on 2009 (Lietuvos Respublikos Seimas, 2009) and “Strategy for National Climate Management Policy 2013–2050” on 2014; Latvia set several strategies - “Environmental Policy Strategy 2014–2020”, “Climate Change Policy Strategy 2014–2020” and Estonia published National Environmental Strategy until 2030 on 2007 (Bosnjakovic, Haber, 2015). Most of these strategies relate to the duties on economic subjects to mitigate climate change by reducing greenhouse gas emissions. However according to OECD data (2015) after implementations of these strategies no extreme changes in emissions amounts have been recorded in Baltics, while the Nordic countries have some significant changes. As Bosnjakovic and Haber mention the actions plans depend on political approval and implementation of these actions by other government and private sectors (2015). So, at this stage climate change mitigation becomes everyone’s responsibility, combining institutional, business and individuals’ efforts.

Different rates of changes within Baltic-Nordic countries are strongly related to the different perception of responsibilities share. The goal of this article is to analyze and compare the perceptions of institutional responsibility in climate change adaptation and mitigation in Baltic- Nordic countries. Article explores the representative survey data from Eurobarometer 2017 on climate change perceptions. Research questions addressed in this article are as follows:

How the public in Baltic – Nordic concerns the seriousness of the climate change issues? How do the perceptions of institutional vs. individual responsibility varies across the Baltic – Nordic countries? Were individual actions taken to fight climate change? What kind of actions were taken?

2. Public perceptions of institutional responsibility on climate change

In the introduction we pointed out that Baltic and Nordic countries acknowledge concerns about climate change and its risk and also they attempt to reduce their impact to the environment by adapting global strategies into national law systems. But the adaptation of global strategies is not the only way to ensure the reduction environmental risks and climate change effects. The main question of the theoretical part is to discuss how the responsibility of institutions of different levels (global, national, and local) in climate change adaptation and mitigation is seen in relation to the individual responsibility.

The term responsibility, which in the Oxford dictionary is explained as duty to deal with something, also as the state or fact of being accountable or to blame for something. In the field of sociology, this term was explained by T. Parsons (1959) as a complex of duties associated to social roles, Strydom (1999) referred to individuals who possess special knowledge, abilities, judgement, power or influence. According to Grunwald (2014) responsibility must be understood as an assignment process, which indicates someone being responsible for something, by defining rules based on knowledge. Löfmark et.al., explains responsibility by relating an action to an actor making a decision (2017). This is the most accepted understanding of the term.
The responsibility for climate change and its mitigation could be divided into two different approaches: retrospective and prospective responsibility. The first one states, that someone must hold responsibility when damage is verified, the second says that – responsibility is supposed to be taken to prevent or impede the damage (Sena, 2014). The retrospective responsibility on climate change is clear. The anthropogenic factors, such as industrial revolution, growing industry, demand of production, energy, deforestation, etc. led humanity to face the consequences of this kind of lifestyle. So, human impact on environment and climate change are directly linked and responsibility lays on everyone’s shoulders.

On the other hand, talking about tackling climate change the concept of prospective responsibility is applicable. Saving the environment for further generations by reducing the damage caused by contemporary society’s daily routines requires efforts from collaborated actors. But at this point it becomes difficult to identify the responsible ones. The prospective or in other words forward – looking responsibility is mostly appreciated with the number of actors involved, like institutions, industry, individuals etc. This substantial number of these actors and difficulties to hold someone responsible, creates the so-called problem of many hands (van de Poel, et.al. 2012). This phenomenon considered by Dennis Thompson discusses the idea that different officials contribute in many ways and it becomes difficult to ascribe moral responsibility to any official (1980). So, in this scenario, the assessment of climate changes impacts could involve decision making procedure being under uncertainty (Gandini et.al., 2017).

Looking at historical perspective, most of the communication in the media about climate change was produced by either scientists or experts (Nisbet, 2009). Their works in science related climate change fields and information produced are being considered trusted. But it was also observed that information framing affects the public perception by engaging the public more effectively or vice versa (Moser, Dilling, 2011). Whenever climate change risk is discussed within the framework of responsibility, many of internal and external actors could be indicated. Starting from international level institutions like – the European Union and ending with individuals, we can state that a multi-level interconnected relation exists. But it is still necessary to understand how the public perceives the responsibility. Some of the social science studies indicate that individuals are more likely to blame institutions, like governments, rather than blame themselves, mainly because the implementation of policy remains their job (Banks, 2013). People think that governments and businesses should do more to help solve environmental problems (Patchen, 2006). The same could be confirmed by forward – looking responsibility which is often understood in relation to institutional roles or tasks (van de Poel, et.al. 2012). The focus of institutional roles or tasks mostly discusses the policy instruments which are supposed to be chosen to determine the behavior of other actors. In this position government institutions become the reflection of collective responsibility and social solidarity. By expressing the response for the needs of country or people and being responsive governments get “buffer” support what makes them more responsible (Linde, Peters, 2018).

The collectively produced hazard of climate change cannot be ascribed to a single individual, but their choices could. But these choices are conditioned by the sets of public policies, social norms, and public infrastructures that shape the nation’s attitudes and behavior towards their impact on climate change (Rajapaksa et.al., 2018). All these factors can lead into an individual decision to continue behaving in an eco-unfriendly manner because there are no other reasonable alternatives in their countries to avoid such actions. If national governments fail to enforce acceptable anti-pollution laws, ensure reduction of pollution and develop cities in more sustainable ways, an entire society is held accountable for each citizen actions. For example, who would avoid commuting with a car if this is an acceptable social norm, supported by the national government. Who is then responsible for the accumulated greenhouse emissions? It would seem that collective responsibility is being applied where individual responsibility would be unwarranted (Vanderheiden, 2011).

It is necessary to point out the need of voluntary participation of other actors in their own government (Sena, 2014). Without their engagement any kind of policies simply will not work, especially if the area covers environmental issues. The voluntarily actions cannot be distinguished from the perception of whole phenomenon. In this case, the main axis is the climate change and its risk management. So, before the actions are taken, the public must perceive the seriousness of the issue and its effects on the further development to the society (Weber,2015). There are many different frames how the climate change can be perceived, but the most stressful one
was indicated by the public health frame. Salient health issues like asthma, allergies etc. makes climate change consequences personally relevant (Nisbet, 2009). However, risk perception of the climate change and the support for adaptation policies vary among the public, not only because of the diverse framing of the problem, but as well of different national contexts and unique experience with the consequences of climate change (Taylor, et.al. 2014). The geographic location of Baltic – Nordic countries are less challenged by extreme weather events caused by climate change, so other factors take the leading roles of climate change perception.

The impacts of climate change for further societal development makes the public consider the aspects of the responsibility for climate change who are responsible for the precautionary actions. Climate change is caused mainly by the long-term human activity and modern lifestyle that makes every individual in some way responsible for global environmental crisis. However, the individuals tend to assign the responsibility to the institutions, but not to themselves. Therefore we would expect the public in Baltic – Nordic countries are likely to believe that the institutional level is supposed to take primary responsibility and action in tackling climate change. The social policies and social norms are necessary to define the individual responsibility levels and the lack of such implementations into daily societies routine will lead to less effective risk management and lack of public engagement. This kind of public incorporation into the search for solutions mostly depends on the framing of a problem, and national political and cultural contexts.

3. Methodology for the climate change risk perception research

This analysis uses the data from Special Eurobarometer on Climate Change (459), conducted in 2017. The main data set was accessed through GESIS Data Archive1. For the analysis, we are using the data from Baltic – Nordic countries: Denmark, Estonia, Latvia, Finland, Sweden, and Lithuania. The sample sizes in analyzed countries are presented below (Table 1).

<table>
<thead>
<tr>
<th>Country</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>1000</td>
</tr>
<tr>
<td>Sweden</td>
<td>1007</td>
</tr>
<tr>
<td>Finland</td>
<td>1012</td>
</tr>
<tr>
<td>Lithuania</td>
<td>1001</td>
</tr>
<tr>
<td>Latvia</td>
<td>1004</td>
</tr>
<tr>
<td>Estonia</td>
<td>1014</td>
</tr>
</tbody>
</table>

Table 1. Sample sizes in selected countries

Source: Special Eurobarometer on Climate Change 459, 2017

The key questions of the SP Eurobarometer 459 used for the research were: 1. Which of the following do you consider to be the single most serious problem facing the world as a whole? (Possible answers: Climate change; International terrorism; Poverty, hunger and lack of drinking water; Spread of infectious diseases; The economic situation; Proliferation of nuclear weapons; Armed conflicts; The increasing global population; Other); 2. And how serious a problem do you think climate change is at this moment? (Possible answers were selected within the scale from 1 to 10, with ‘1’ meaning it is “not at all a serious problem” and ‘10’ meaning it is “an extremely serious problem”); 3. In your opinion, who within the EU is responsible for tackling climate change? (Possible answers: National governments; The European Union; Regional and local authorities; Business and industry; You personally; Environmental groups; Other; All of them; None); 4. Have you personally taken any action to fight climate change over the past six months? 5. Which of the following actions, if any, apply to you? (Try to reduce waste and regularly separate it for recycling; try to cut down on consumption of disposable items; etc.).

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1 Access to data: https://dbk.gesis.org/dbksearch/sdesc2.asp?no=6861&db=e&doi=10.4232/1.12915
With these five questions we analyzed further dimensions: Questions 1 and 2 evaluate the public perception of the seriousness of climate change among the public (these questions intend to explain public evaluation of climate change concerns). Questions 3 to 5 indicate the perceived responsibility among Baltic – Nordic countries on climate change risks. Question 3 identify the institutional level, questions 4 and 5 – individual level.

Then further in the article we are using the merged data for Nordic countries (Denmark, Finland and Sweden) and Baltic countries (Estonia, Latvia and Lithuania) ir order to reveal the differences and similarities in public attitudes towards climate change.

4. Tendencies of public perception of institutional responsibility in Baltic-Nordic countries

Eurobarometer has a question allowing to investigate what types of problems are perceived as most serious in various countries. Figure 1 (below) presents the comparative results of public perception in Baltic – Nordic countries.

Results identify, that the perception of the most serious issues varies a lot comparing Baltic and Nordic countries. In Nordic countries, climate change is considered as the most serious problem (selected by 27% of public in Nordic countries), while in Baltic countries it is only in 6th position in the list. As only one answer was possible, it says a lot about prioritizing the most serious world problems. Such results reveal that public in Nordic countries are more likely to be concerned about more global issues, while Baltics identifies international terrorism as the most significant issue. But at this point it is possible to discuss how serious the Baltics are about the “real” terrorism the world is facing, and how this perceived seriousness is affected by the geopolitical situation. As the social amplification of risk explains, familiarity with the hazard, and the catastrophic potential shape public response (Kasperson, et.al 1988). The same could be discussed about the poverty, hunger and lack of drinkable water. Nordic countries consider this as the second most genuine issue, as well as Baltics, but there is possibility that Nordics see this problem in more global context, while within Baltics this could be assumed as one of the problems their own countries are facing. Especially it concerns poverty and people at risk, which according to Eurostat data (2017) is much higher in Baltics rather than in Nordic countries.

Perceived seriousness and concerns about climate change at the moment are also different between the regions (see Table 2.). The results show that 77% of Nordic respondents expressed their concern on climate change as a very serious problem, while in Baltic countries the percentage is significantly below EU28 average (57% vs.
It is worth to mention that even 13% of all the respondents in Baltic countries stated that climate change is not a serious problem at all, which leads to the conclusion that there exists a huge gap in the perception of climate change in Baltic countries.

Table 2. How serious of a problem do you think climate change is at this moment?

<table>
<thead>
<tr>
<th>Concerned seriousness</th>
<th>Nordic</th>
<th>EU 28</th>
<th>Baltic</th>
</tr>
</thead>
<tbody>
<tr>
<td>A very serious problem</td>
<td>77%</td>
<td>74%</td>
<td>57%</td>
</tr>
<tr>
<td>Fairly a serious problem</td>
<td>16%</td>
<td>18%</td>
<td>28%</td>
</tr>
<tr>
<td>Not a serious problem</td>
<td>6%</td>
<td>6%</td>
<td>13%</td>
</tr>
<tr>
<td>DK</td>
<td>1%</td>
<td>2%</td>
<td>2%</td>
</tr>
</tbody>
</table>

*Source: Special Eurobarometer on Climate Change 459, 2017*

The main goal of this article was to identify how people in Baltic – Nordic countries perceive the institutional responsibilities in climate change adaptation and mitigation. Figure 2 presents the attitudes of public towards the institutional responsibilities for tackling climate change. There were multiple answers possible, so the results indicate the broader perception of responsibility share.

Fig. 2 Who within the EU is responsible for tackling climate change?, % (multiple answers possible)

Results identify significant differences in the perception of institutional responsibility across the actors of various levels. Public in Nordic countries attribute higher levels of responsibility to actors and the frequency of mentioning them was higher than the average in the EU28. As the most responsible ones’ people from Sweden, Finland and Denmark indicated national governments (57%), European Union (54%) and business and industry (51%). While the average in Baltic countries was 37% for national governments (EU28 average- 43%); the EU- 26% (EU28 average 39%); business and industry 39%. (EU28 average- 38%). Policy makers and main polluters (industries) are being perceived as the most responsible institutions. Despite the higher consideration rate of each actors in Nordic countries, the tendency of institutional responsibility share is the same.

Another dimension on this responsibility map is individual responsibility and the possible answer “you personally There is a huge difference between Nordic and Baltic states in the perception of institutional responsibility. More than 40% of public in Nordic countries identified they feel personally responsible, compare to only 18% in Baltic countries (that is below EU28 average of 22%). 
The avoidance of personal responsibility to fight climate change also could be noticed in the further results (Table 3.) “Have you personally taken any action to fight climate change over the past six months?” was one of the questions revealing the level of individual responsibility. As the results indicate, most of respondents (68%) from Nordic countries said “yes” and their activity exceeds EU average (49%). The majority (60%) in Baltic countries said that they have not taken any actions. This could be the consequence of previously reviewed results indicating that people in Baltic countries do not perceive climate change as a serious problem, but also on the other hand these results may identify the low level of understanding about how individual actions (for example, environmentally friendly behavior, such as recycling of energy saving) can contribute to tackling climate change.

Table 3. Have you personally taken any action to fight climate change over the past six months?

<table>
<thead>
<tr>
<th>Actions taken</th>
<th>Nordic</th>
<th>EU 28</th>
<th>Baltic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>68%</td>
<td>49%</td>
<td>36%</td>
</tr>
<tr>
<td>No</td>
<td>29%</td>
<td>47%</td>
<td>60%</td>
</tr>
<tr>
<td>DK</td>
<td>3%</td>
<td>4%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Source: Special Eurobarometer on Climate Change 459, 2017

Survey also included questions about the range of actions that were taken in Baltic and Nordic countries (see table 4.). The results show that individuals mostly are reducing waste and regularly separate it for recycling. Both Baltic and Nordic countries mentioned this action as most frequent (65% in Baltic and 79% in Nordic). The second most common action taken was attempting to cut down of consumption of disposable items, for example plastic bags (70% in Nordic countries vs. 56% in Baltic countries). However, results identify that there are large differences not between the Baltic – Nordic regions, but within the Baltic countries.

Only 43% of Latvia respondents try to reduce waste and regularly separate it for recycling, while Lithuania (78%) and Estonia (61%) do much better in this field. The enormous impact for such results in Lithuania and Estonia is because of a couple of national laws on recycling, which have been implemented during the last couple of years. Most plastic or glass bottles and cans are being returned to special places, to get returned deposit paid in advance. Also, the price of unrecycled waste keeps growing, so more and more households take different garbage containers to reduce the price. While Sweden, Finland, Denmark, Lithuania and Estonia show remarkable results, Latvia still doubts the necessity for such system. Even the good practice of Nordic countries that are using the bottle deposit refund system for a while and impressive results from other neighbors have not created an opportunity for majority of Latvians to take this action in much simpler way.

Table 4. Actions taken by country, %

<table>
<thead>
<tr>
<th>ACTION TAKEN % MULTIPLE ANSWERS POSSIBLE</th>
<th>LITHUANIA</th>
<th>LATVIA</th>
<th>ESTONIA</th>
<th>SWEDEN</th>
<th>FINLAND</th>
<th>DENMARK</th>
<th>EU28</th>
</tr>
</thead>
<tbody>
<tr>
<td>You try to reduce your waste and you regularly separate it for recycling</td>
<td>78</td>
<td>43</td>
<td>61</td>
<td>88</td>
<td>75</td>
<td>70</td>
<td>71</td>
</tr>
<tr>
<td>You try to cut down on your consumption of disposable items whenever possible</td>
<td>62</td>
<td>46</td>
<td>57</td>
<td>69</td>
<td>67</td>
<td>72</td>
<td>56</td>
</tr>
<tr>
<td>You buy locally produced and seasonal food whenever possible</td>
<td>33</td>
<td>49</td>
<td>45</td>
<td>63</td>
<td>42</td>
<td>46</td>
<td>41</td>
</tr>
<tr>
<td>When buying a new household appliance e.g. washing machine, fridge or TV, lower energy consumption is an important factor in your choice</td>
<td>29</td>
<td>49</td>
<td>44</td>
<td>47</td>
<td>38</td>
<td>55</td>
<td>37</td>
</tr>
<tr>
<td>You regularly use environmentally-friendly alternatives to your private car such as walking, cycling, taking public transport or car-sharing</td>
<td>18</td>
<td>49</td>
<td>30</td>
<td>56</td>
<td>43</td>
<td>47</td>
<td>26</td>
</tr>
<tr>
<td>You have insulated your home better to reduce your energy consumption</td>
<td>18</td>
<td>36</td>
<td>34</td>
<td>13</td>
<td>16</td>
<td>29</td>
<td>18</td>
</tr>
<tr>
<td>You avoid taking short-haul flights whenever possible</td>
<td>6</td>
<td>19</td>
<td>6</td>
<td>38</td>
<td>22</td>
<td>13</td>
<td>10</td>
</tr>
</tbody>
</table>
You have bought a new car and its low fuel consumption was an important factor in your choice 6 7 14 22 14 26 9
You have installed equipment in your home to control and reduce your energy consumption (e. g. smart meter) 5 9 7 8 15 18 8
You have switched to an energy supplier which offers a greater share of energy from renewable sources than your previous one 0 3 4 24 12 11 7
You have installed solar panels in your home 1 2 1 1 2 5 4
You have bought a low-energy home 1 1 5 2 1 5 3
You have bought an electric car 1 0 0 1 1 1 1

Source: Special Eurobarometer on Climate Change 459, 2017

Another aspect to be discussed is the level of using environmentally-friendly transportation alternatives. Only 18% Lithuanians mentioned that they regularly walk, cycle or take public transport, while the results of other Baltic – Nordic countries are higher than the average of EU28 – 26%. Compared with Eurostat data (2017) Lithuania was the second country regarding the kilometers travelled by passenger cars in the whole of Europe. This possibly means that the public in Lithuania has limited access to well-developed public transport and cycling infrastructures and are unable to use more environmental – friendly alternatives.

The comparative analysis of Baltic – Nordic countries revealed that most of the public in this region assigns higher responsibility to the institutional rather than individual level. The European Union, national governments and business with industry were perceived and indicated as mostly responsible for tackling climate change both in Baltic and Nordic countries. However, the general level of concern differs between the regions. People in Nordic countries express their deeper concern with climate change as the most serious problem in the world, as well they assign more responsibilities to different institutions and individuals rather than public in Baltic countries. Results indicate that the higher is perceived individual responsibility, the more active are individuals in the mitigation of climate change. The differences in the level of actions taken among Baltic countries identify the effects of environmental policies towards the individual behaviors.

Conclusions

Climate change as collectively produced hazard creates two interconnected dimensions of responsibility. The first dimension refers to institutional level. Such institutions as governments and businesses possess the necessary tools to foster more environmentally friendly alternatives for individuals. This includes the sustainable urban development, upgrades of local infrastructures making public or eco-friendly transport to be used in daily routines, increase the production of eco-friendly items etc. Thus institutions overall have the power to provide individuals with alternatives leading towards climate friendly individual actions. The other level of responsibility requires individual effort to create a demand from businesses and require for targeted policies from governments. This kind of voluntary participation reflects the perception of everyone being responsible and combines the collaborated actions to achieve the same goals. The analysis of the perception of responsibility of climate change in Baltic – Nordic countries revealed significant differences between the regions. People in Nordic countries assign higher level of responsibility for the main institutions like national governments, the EU, business and industry than public in Baltic countries. Notable differences were revealed in the attitudes towards individual action and role in the fight with climate change. Very low individual responsibility in climate change risk mitigation in Baltic countries may be explained by geopolitical and cultural contexts. Political tension of neighbor actions possibly make Baltic countries to be less concerned about the seriousness of climate change than Nordic countries, and the lack of targeted climate policies and communication about climate change from national governments makes less individual actions being taken individuals. Still, as data indicates, behavioral patterns at individual level are shaped by environmental policies, therefore effective targeted climate policies at national and local levels could significantly increase the levels of individual concern and participation.
Acknowledgements

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CLIMATE CHANGE INFORMATION ON INTERNET BY DIFFERENT BALTIC SEA REGION LANGUAGES: RISKS OF DISINFORMATION & MISINTERPRETATION

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Abstract. The internet space is the most important and affluent source of climate change related information. However, information content are not always satisfying and threat of fake news and disinformation are very realistic. The analysis included top 10 search results of four phrases (Climate change, Global warming, Adaptation to climate change and Climate change policy) using Google search engine. The phrases were searched in 11 Baltic Sea Region (BSR) languages and in the Ukrainian and English languages. The results revealed that climate change disinformation and misinterpretation exists on the internet. Mostly it displayed in indirect forms such as old information, existence of junksites, advertisements, unequal share by main actors (government, mass media, etc.). Moreover, on Eastern BSR languages, internet search results of climate change information are less convenient comparing to western BSR languages. The usage of multi-language approach in Wikipedia pages could be one of the freshest and most reliable sources of information about climate change.

Keywords: climate change; risk; information; Internet; Baltic Sea Region

Reference to this paper should be made as follows: Kažys, J. 2018. Climate change information on internet by different Baltic Sea Region languages: risks of disinformation & misinterpretation, Journal of Security and Sustainability Issues 7(4): 685-695.

JEL Classifications: Z13

1. Introduction

The internet start to play more and more important role in our lives. In 2016, 85 % of European households had access to the internet from home (Eurostat, 2016). Therefore, the internet is one of the best platforms to communicate about climate change (Anderson 2009). The integral role played by the media is not surprising, as it is still the main source of information and opinion for millions of readers and viewers through newspapers, magazines, television, radio and the internet (Boykoff and Rajan, 2007). However, mass media have been a key vehicle by which climate change contrarianism has travelled (Boykoff, 2013) and the mass media potential remains largely untapped (Shah, 2016). The same controversial situation forms in internet social media (Anderson, 2017; Šišulák, 2017; Limba, Šidlauskas, 2018). Moreover, the need for a society of science-literate citizens is becoming increasingly apparent (Nature Communications, 2017).

Latest Eurobarometer (2017) report revealed that 92% of EU citizens see climate change as a serious problem and 74% see it as a “very serious” problem. In Baltic Sea Region (BSR) climate change awareness increasing. However the levels of information perception are different in Baltic – Nordic countries (Budžytė and

1 The research was performed within framework of Erasmus+ project “Risk and Security Governance Studies within Baltic – Nordic Academic Community of Practice” (No 2015-1-LT01-KA203-013467)
Balžekienė, 2018). Kažys (2016) found that the climate change information content in the internet holds higher quality in Western BSR countries than in Eastern ones.

More and more research on climate change communication in the internet space exist (Anderson, 2017; Greer ir Mensing, 2006; Jančevskaitė and Telešienė, 2013; Kažys, 2016, Levison et al., 2014; van der Linden et al., 2014). The public’s awareness of the scientific consensus on human-caused climate change is a prime example of the consequences of scientific misinformation (Nature Communications, 2017). On one hand, mass- and social-media raise the awareness; on other hand, they provide scepticism in the internet space (Anderson, 2017; Jančevskaitė and Telešienė, 2013). Moreover, climate change communication process is very difficult one, because a lot other factors, especially policy options, windows, and barriers, come into play (Moser & Dilling 2012; Stern, 2016). Studies by Metag et al. (2017), Roser-Renouf et al. (2015), Schäfer et al (2018) revealed that public perception of climate change information in different social groups are not the same and the communication should be directly orientated to group demands. An overview of existing research body on climate change risk discourses in Lithuanian media indicated huge demand of this information (Telešienė 2018). There are a lot emerging issues for future research and practice on climate change communication (Moser, 2010).

The aim of this research is identify possible sources of climate change misinformation and disinformation in the internet by BSR languages. The internet space could include direct (fake news, governmental denial, scepticism sites) websites and indirect (old information, junksites, advertisements, etc.) forms of misinformation about climate change. This research could be helpful indicating weaknesses of internet search engines and encourage new generation smart PageRank algorithms, which could prevent emerging of fake news on the top of search result pages. Moreover, the findings will widen scientific understatement and deepen knowledge of social communication in the internet space.

2. Methodology of the research

The same analysis methodology already have been used by Kažys (2016, 2017). Four phrases related to climate change topic – Climate change, Global warming, Adaptation to climate change, Climate change policy picked as the most representative ones to fulfil the picture of information in the internet. The phrases translated in 11 Baltic Sea Region (BSR) languages. Additionally, the Ukrainian and English languages selected for comparison (Fig. 1). The phrases translated using EuroVoc multilingual thesaurus (eurovoc.europa.eu) and Google Translator (translate.google.com).

Google search engine used for the search of the phrases in the internet. According to search engine market share in Europe (January 2018) Google occupied 91.66% of the market (StatCounter, 2018). Additionally Yandex search engine used for search in Russian (abr. RUS2). Yandex occupied 54.05% of the market (Google – 42.43%). Chitika (2013) found that the first page take 91.5% of Google traffic because of that only top10 results (the first page) of Google search used in further research.

Analysis based on the case study of January 18, 2018 Google search engine results. The analysis focused on four contextual parameters for 4 different phrase in top10 search sites:

- Information updating – the percentage of sites representing novelty of information deviated into 3 categories from 2016 and up to date, from 2013 to 2015, 2012 and older.
- Politics – the percentage of governmental (different levels of governance) sites.
- Media – the percentage of mass (target) media sites.
- Science – the percentage of sites that include scientifically based research information.
### Table 1. The interpretation of 4 phrases (Climate change, Global warming, Adaptation to climate change, Climate change policy) in different languages

<table>
<thead>
<tr>
<th>Language versions</th>
<th>Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>English (UK)</td>
<td>climate change, adaptation to climate change, climate change policy, global warming</td>
</tr>
<tr>
<td>Беларускую (BY)</td>
<td>змена клімату, адаптацыя да змены клімату, палітыка ў галіне змены клімату, глобальные падвярдэнні</td>
</tr>
<tr>
<td>Dansk (DK)</td>
<td>Klimaændring, Tilpasning til klimaændringer, Klimapolitik, global opvarmning</td>
</tr>
<tr>
<td>Deutsch (DE)</td>
<td>Klimawandel, Anpassung an den Klimawandel, Klimaschutzpolitik, globale Erwärmung</td>
</tr>
<tr>
<td>Eesti (EE)</td>
<td>kliimamuutus, kliimamuutuste politiitka, globaalne soojenemine</td>
</tr>
<tr>
<td>Latviešu (LV)</td>
<td>klimata maiņa (klimata pārmaiņas), pielāgošanās klimata pārmaiņām, klimata pārmaiņu politika, globālā sasilšana</td>
</tr>
<tr>
<td>Lituanų (LT)</td>
<td>klimato kaita, prisitaikymas prie klimato kaitos, klimato kaitos politika, pasaulinis atsilimas</td>
</tr>
<tr>
<td>Norsk (NO)</td>
<td>Klimaendring, tilpasning til klimaendringer, klimapolitikk, global oppvarmning</td>
</tr>
<tr>
<td>Polski (PL)</td>
<td>zmiany klimatu, dostosowanie do zmiany klimatu, polityka przeciwdzialania zmianie klimatu, globalne ocieplenie</td>
</tr>
<tr>
<td>Русский (RU)</td>
<td>изменение климата, адаптация к изменению климата, политика изменения климата, глобальное потепление</td>
</tr>
<tr>
<td>Suomi (FI)</td>
<td>Ilmastomuutos, ilmastomuutoksen sopeutuminen, ilmastomuutospolitiikka, globaali lämpeneminen</td>
</tr>
<tr>
<td>Svenska (SE)</td>
<td>Klimatförändring, klimatanpassning, klimatpolitik, global uppvärmning</td>
</tr>
<tr>
<td>Українська (UA)</td>
<td>зміна клімату, адаптація до зміни клімату, політика зміни клімату, глобальне потепління</td>
</tr>
</tbody>
</table>

Source: EuroVoc multilingual thesaurus (eurovoc.europa.eu), Google Translator (translate.google.com)

The results divided to three different levels: high, intermediate and low by country. Additionally the information connectivity between 4 different phrase in top10 search sites analysed using 3 principles:
- Interconnectivity – the same site opens in different links for different phrase.
- Repetition – the same main site (not link) opens for the same phrase.
- Dubbing – exactly the same link opens for different phrase.

Further analysis of top10 search results included the identification of junksites (the sites which is including the information not directly related to the topic or contains disinformation patterns) and of accompanying information on Google search page (Advertisements, Info boxes, News boxes, Google Scholar and Goggle Images links). The number of advertisements and junksites per 10 sites calculated per country.

Kažys (2016) found that Wikipedia website is one of the main sources of information on climate change topics in BSR languages. Firstly, the sum of 4 Wikipedia pages (Climate change, Global warming, Adaptation to climate change, Climate change) length in kilobytes calculated using Wikipedia Page information tool. Additionally 3 Wikipedia pages (Paris Agreement, Climate change denial, Global warming controversy) added for the widening of the research. Finally, the number of countries per climate change topic and the number of topics per country were calculated.

### 3. Climate change information on internet by Baltic Sea Region languages

#### 3.1 Contextual parameters of information

Previous research by Kažys (2016) revealed that in top10 search results most important features of climate change information are constant refreshment and sharing between different actors. Regular updated information will not lose efficiency and will satisfy public needs. Especially it is important for information, which appears in mass media sites. The intersection of mass media, science and policy is a particularly dynamic arena of communication, in which all sides have high stakes (Boykoff and Rajan, 2007). In addition, it is very
important to keep the equilibrium between these actors. One third of the sites should be governmental (from local, through national to international levels), another third should include media (from mass to specific) and the last third should be related to social networks (YouTube, Facebook, Twitter, Wikipedia) and NGOS. It is very important to highlight that scientifically based information should be dominant one in majority of sites. UNESCO believes that open access to scientific literature is as key for realizing the majority of the 2030 sustainable development goal and could be fatal element to conquer fake news (Nature Communications, 2017).

*Google* top10 search results showed that most of the sites (>50%) update the information permanently (Fig. 1a). However only four countries reach 75% mark. Some differences between Nordic and Easter Europe countries persist as it was discovered by Kažys (2016). Usually information on phrase Global Warming is the oldest one. Largest percentage of recently updated information appears on phrase Climate change policy. Mot permanent information updating made by mass media sources.

![Fig. 1. Percentage of information updating (a), political (b), media (c) and scientifically (d) based sites in top10 Google search of 4 phrases (Climate change, Global warming, Adaptation to climate change, Climate change policy) by country (January 18, 2018). Levels: high (white), intermediate (grey) and low (black)](image_url)

For keeping the equilibrium between different actors in the climate change topic governmental sites should cover from one fifth to one third of top10 sites. It is obvious that only 6 counties hold in these limits (Fig. 1b). Baltic States climate change topic is prescribed as political issue, with no personal responsibility in it. Balžekienė et al. (2008) and Budžytė and Balžekienė (2018) support the same findings. Opposite situation appears in Slavic countries, lack of political and governmental initiative solving climate change problems is a huge challenge in these countries. In Baltic States the recent rise of governmental sites activity related to releasing and supporting campaign of climate change strategies on national level. Another reason is lacking of one main site bringing information about climate change (many governmental providers), though most of the Western Europe countries have special sites of climate change information. Different EU initiatives could be a solution to keep the right balance and share reliable information in international and regional levels in every language.
A little bit better situations occurs analysing media sites (Fig. 1c). Again, most relevant distributions is between 20 and 33 percent of top10 results. Eight of thirteen countries fits the range. However, media penetration is a little bit lower in Baltic States due to lack of interest in climate change topic (Telešienė, 2009; Jančevskaitė and Telešienė, 2013) and week journalism traditions (Balčytienė, 2011). Very dangerous situation occurs for Byelorussian language sites, 45 percent of content is occupied by mass media sites. It means more sensation seeking and less scientifically or governementally proofed information are available in the internet. Media are more interested in Climate change and Global Warming phrases than Adaptation and Policy topics.

Unfortunately, most of the sites in top10 search results hold very less scientific information (Fig. 1d). It is very much similar percentage throughout all the languages, English language is more an exception. The number one scientific language provides relevant and newest information about climate change on international level. However, it is no longer the truth talking about national and subnational levels. Moreover, Kažys (2016) showed that fluent knowledge of English still a bid for the future between eastern BSR countries. Most common to find scientific information is Wikipedia pages, special national government sites and EU climate change platforms.

All the phrases (Climate change, Global warming, Adaptation to climate change, Climate change policy) are topically related to climate change. The next step is to analyse interconnectivity, repetition and dubbing of internet sites between Google search top10 results.

Interconnectivity of sites are very much country individual (Fig. 2a). Every country have at least two interconnected sites. Mostly interconnectivity exists between two phrases. Only five countries have interconnectivity between all four phrases. Best examples of interconnectivity is Wikipedia, European Commission’s Climate Action Initiative, national climate change platforms and mass media websites. In one hand interconnectivity is positive (e.g. Wikipedia, EU sites), because it opens the ways for wide range of reliable information reaching the internet users. On other hand, less reliable sites (e.g. mass media) block other sites to reach top10 positions. It is promising that Lithuania has the highest number of interconnected sites, though it could be related with very low activity of other sources (Kažys, 2017).

Again, repetition and dubbing of sites block other sites sometimes with more reliable information) to reach top10 positions. Surprisingly high percentage (18%) of these sites were found (Fig. 2b), e.g. various links of climate.nasa.gov appeared for seven times. Even though all phrases have the same topicality, the information should be presented separately. Mostly dubbing of information related to mass media sites and it outweigh the repeatability of sites. The repetition sites distributed equally between government and mass media. In Nordic countries the percentage of these sites are lower than in other countries. However, for these countries the origin of higher percentage are different. In German and English languages, high number of repetition and dubbing
of sites are caused by mass media, which is very important actor in internet information about climate change. Lack of sufficient and reliable information sources are the main reason of higher rates of these sites in Baltic States and Eastern Slavic countries.

3.2 Junksites and additional information

In this research, I found only two direct evidences of climate change denial. It is a Polish Wikipedia page (pl.wikipedia.org/wiki/Globalne_ocieplenie_-_wielkie_oszustwo) in which the documentary “The Great Global Warming Swindle” (2007) is presented. Another fake climate news came from Yandex search (RU2). The social blog site “The world of prognosis (www.mirprognozov.ru)” presents article called “Global warming – the lie of the century (Глобальное потепление — ложь века!)”. However, the number of junksites in some extent exist in every language (Fig. 3a). Surprisingly high number of junksites found among Yandex search (RU2) results. Yandex search does not have information segmentation tools as Google (images, videos, advertisements, etc.) does. Yandex.ru extensions (news, images, video) obstruct the way for other sites entering the top search results. In case on Byelorussia, many sites of English advertisements for studies abroad appear (by.academic-courses.com, by.lawstudies.com, etc.) which not contain any particular information about climate change. The junksites could appear because of the linguistic reasons. In polish, entering the phrase “zmiany klimatu” instead of “zmian klimatu” (climate change) in Google search the junksites occupied seven positions in top10, because of the famous concert club with the same name (zmianaklimatu.eu). Perfect scenario is to have no junksites at all. However, recent Google PageRank algorithm and SEO policy opens the ways for fake news appearing in top10 search results.

![Fig. 3. Number of junksites (a) and advertisements (b) per 10 sites in top10 Google search of 4 phrases (Climate change, Global warming, Adaptation to climate change, Climate change policy) by country (January 18, 2018). Levels: high (black), intermediate (grey) and low (white). RU2 – Yandex search engine in Russian language.

Another negative aspect along with junksites are advertisements appearing on the top and at the bottom of search results. Even the advertisements are very much related to climate change topic and are marked with special signs (adv. in English), they still occupy best top places; and the ranking of the webpage directly related to popularity (Chitika, 2013). The advertisements appearance on climate change Google search results are not typical in every (Fig. 3b). Actually, the number of advertisements related to internet market share and availability to reach wider audience. Climate change topic popularity and accessibility in English much higher than in Lithuanian language (Kažys, 2017).

Google top10 search results on climate change information contain more extra information (Table 2). As an advertisements News boxes show economy potential and internet market width of the country; the boxes positioned in different sections of top10 searches. Links to Google Images found in four languages, which is good because Google has special tool for images search. Kažys (2016) found links to Google Images almost by every language; the situation is by a long way better now. However, not all extras distracts and occupies search results positions, some of them have positive effects on information (Info box, Scholar). Using Info box, It is a very
easy to reach reliable information. The phrases Climate Change and Global Warming had these boxes in almost every language (Table 2), and there were almost no Info boxes in previous research (Kažys, 2016). Mostly Info boxes have links to Wikipedia pages and sometimes to the national climate change websites. Unfortunately only English version of phrases Adaptation to climate change and Climate change policy had links to Google Scholar (scholar.google.lt), even though UNSECO believes that open access to scientific literature is a key to success to conquer fake climate news (Nature Communications, 2017).

Table 2. Existing of various extra information categories in top10 Google search of 4 phrases (Climate change, Global warming, Adaptation to climate change, Climate change policy) by country (January 18, 2018). Matches: +<5, +5-8, +++>8

<table>
<thead>
<tr>
<th>Country</th>
<th>Info box</th>
<th>Scholar</th>
<th>News</th>
<th>Images</th>
<th>Adv. top</th>
<th>Adv. bottom</th>
</tr>
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3.3 Climate change pages in Wikipedia

In this case study of January 18, 2018 Wikipedia site was most popular among Google top10 search results. The same findings appeared analysing longer time periods of Google search results in BSR (Kažys, 2016) and in Lithuania (Kažys, 2017). The information abundance illustrated by total amount of information in Wikipedia pages (Fig. 4a). The sum of kilobytes (KB) of all four phrases work as controlling mechanism of information reliability. It means that information amount triggers quality, because more people are in control of the content. Sixty percent of information fall on phrase Global Warming; phrases Climate change, Adaptation to climate change, Climate change policy share 21, 7 and 12 percent respectively. It is not surprise that information amount in English and German versions are the highest. In general, all bigger countries (languages) create more information about climate change. However, the amount of information does not guarantee having more users of it; the number of visits in Wikipedia pages are very low in Russian and Ukrainian languages (Kažys, 2017). For the countries in the red level (Fig. 4a), it is a huge perspective for adding new materials on climate change topics in Wikipedia pages, e.g. Latvian version of Climate change page is still a formality without any consistent information on it. Moreover, before August 2017, Climate change page did not existed in Byelorussian language; and now it exists.

Wikipedia pages provide a lot different information on climate change topic. For deeper understanding of climate change topicality, three more pages (Paris Agreement, Climate change denial, Global warming controversy) added to the analysis. No doubt, that Paris Agreement (2015) is one of the most environmentally significant events in recent years (Nature Communications, 2017). The adoption of the Paris Agreement is a milestone in international climate politics (Streck et al., 2016), even thou importance and viability of the agreement is still part of the discussions (Clémençon, 2016). Cook et al. (2016) found that the finding of 97% consensus (that humans are causing recent global warming) in published climate research is robust and consistent with other surveys of climate scientists and peer-reviewed studies. However, 2016 survey by the Yale Program on Climate
Change Communication showed that more than half of American adults are unaware that a consensus exists (Nature Communications, 2017). Wikipedia pages present wide spectre of climate change denial topic as an instrument to fight against this scelps in public and even though among politics (Mildenberger et al., 2017; Ringailaitė, Jonušauskaitė, 2014).

**Fig. 4.** Pages’ length in kylobytes (KB) of 4 Wikipedia pages (Climate change, Global warming, Adaptation to climate change, Climate change policy) (a). Number of country per page (b) and pages per country (c) which include climate change information (Pages: Climate change, Global warming, Adaptation to climate change, Climate change policy, Paris Agreement, Climate change denial, Global warming controversy) by country (January 18, 2018) by country (January 18, 2018). Levels: high (white), intermediate (grey) and low (black).


Only Wikipedia site is providing the information on phrases *Climate change* and *Global warming* in every language (Fig. 4b). *Paris Agreement* and *Climate change denial* topics have pages in nine from 13 languages comparing to *Climate change policy* pages; they exist only by three languages. Again the differences between western and eastern European countries exist for climate change information coverage in Wikipedia (Fig. 4c). Only four countries have from 6 to 7 active Wikipedia pages. For Baltic States and Belorussia are still a lot of to improve for covering climate change topics in Wikipedia.

**Conclusions**

Mostly climate change disinformation and misinterpretation on Google internet search displayed in indirect forms exist by every Baltic Sea Region (BSR) language. These forms are old and not regularly updated sites; unequal share of top results between governmental, NGOs, media and social sites; lack of scientifically based information; existing of junksites, advertisements, etc. There are significant differences between Western and Eastern BSR languages. Even though there are some improvement of information quality on the internet among Easter BSR countries, still climate change topics are exposed to more challenges comparing to western coun-
tries. Keeping the right balance between governmental and mass media sites informing about climate in the internet is very important. Moreover, information should be updated at least once per year and it should have scholarliness content. Different EU (European Environmental Agency, European Climate Adaptation Platform) and NGOs (Greenpeace, WWF) climate change initiatives could be a solution to keep the right balance and share reliable information on international and regional levels in every language. However, official climate change portals should be available in every BSR language for meeting national and regional needs.

It is impossible to avoid junksites in top10 search results because Google’s (and other search engines) PageRank algorithm are still not capable to distinguish every disinformation and fake news threats on the net. Unfortunately, usage of SEO tools allows manipulating with search results content. It opens the ways for fake news to soak up in top10 search results. Moreover, global web market share and potential number of language users, accompanied with individual preferences of the users (PageRank algorithm), directly correlate to amount of additional information on the search results page. On perspective, such environmental topics as climate change should be more protected from any commercial and not attributed information (advertisements, news box, etc.). The future policy for the search engines should be focused on the development of disinformation protection strategy to clarify content of the search.

Wikipedia pages are most usual and often top presenters of climate change information on Google search engine. The amount of information and variety of different climate change topics in Wikipedia pages lead to keep regular updating and checking of information, which is very important issue avoiding disinformation and incorrect interpretations. Multi-language approach makes Wikipedia pages as very important actor to access scientifically proofed information for the public. Eastern BSR countries, especially Byelorussia, have huge potential to improve and to develop information quality and quantity on Wikipedia pages.

References


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TOWARDS SUSTAINABLE DEFENCE ORGANIZATION: VALUES CONGRUENCE AND ORGANIZATIONAL COMMITMENT

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Abstract. A profound transformation of modern culture in line with increasing individualism and self-interest have been observed in the last few decades. While competing for limited resources, public organizations have to tackle the issues of lower commitment and turnover of employees. A recent shift of Lithuania’s defence policy revealed the issues, related to the attraction and retention of qualified personnel. It appears that organizations have to fulfill the demand for loyal and committed personnel and to deal with increasing individualism and self-interest. Thus, the research aims to investigate if and how values congruence of defence organization is interrelated to intentions of personnel to continue and organizational commitment. Theoretical discussion, related to person and organization fit, values congruence and organizational commitment, led to develop a questionnaire. The analysis is grounded on the survey of personnel deployed in one unit of defence organization. The final sample comprised 56 respondents. The results confirm the assumption that higher affective commitment increases intentions to stay with organization. In addition, the conclusion that personnel demonstrate identification with organization can be made. Second, the study demonstrates that physical values congruence is positively interrelated with affective commitment. Hence, the sense of favourable social guarantees, benefits, appropriate work place and health considerations influence individual’s identification with organization. The implications for top-level management lie in the possibility to monitor values congruence and subsequently, increase organizational commitment of staff.

Keywords: values congruence, person-organization fit, organizational commitment, defence organization.


JEL Classifications: L30, L31, M12

1. Introduction

Globalization, economic development and the diversity of mass-media appear to be the driving forces, impacting social changes of various countries. A longitudinal survey of European countries revealed a profound transformation of modern culture and confirmed the assumption that changes depend upon the stage of socio-economic development and historical factors (European values study 2018). The rise of individualism and self-interest undoubtedly influence organizations. Thus, organizations have to deal with the issues of lower commitment and turnover of employees. These issues appear to be profound in public organizations, which have to attract and retain professional labour force and thus have to compete for limited resources. The scholars set to investigate what factors contribute to the higher organizational commitment and subsequently lower turnover of workforce. A separate strand of literature aimed to focus on culture, norms and values of organization and a good match between the values of employees and the values of organization (Dwivedi et al. 2014). A lot of attention has been paid to public sector: healthcare organizations, local government, educational organizations and etc. (Shiptone
et al. 2016; Jin et al. 2018; Yousef, 2017), however investigations in defence organizations’ context are scant. A recent shift of Lithuania’s defence policy revealed the issues, related to the attraction and retention of qualified personnel. It appears that organizations have to fulfil the demand for loyal and committed personnel and to deal with increasing individualism and self-interest. Thus, the research aims to investigate if and how values congruence of defence organization is interrelated to intentions of personnel to continue and organizational commitment. The paper is structured as follows. First, the discussion on values congruence and organizational commitment is provided. The next section defines research sample, research methodology and data composition. The third section presents research findings. Finally, conclusions and recommendations are developed.

1. Literature review

1.1. Person and organisation fit

The increasing body of scientific studies emphasise the significance of person and organisation (PO) fit. The discussion is grounded on the widely accepted idea of person and work environment compatibility (Kristof-Brown et al. 2005). The scholars assert that in the late 1980s and early 1990s the investigations were focused on the following dimensions: goal congruence, value congruence, needs-structure fit and personality-climate fit (Véiquer et al. 2003). The literature defines the main explanations of person and work environment fit, grounded on complementary and supplementary perspectives. While the first perspective assumes that fit prevails when the needs of organization are filled by the person or vice versa, the second perspective assumes that an individual and organization have similar characteristics (Anderson et al. 2008). Supplementary fit is seen as a multidimensional aspect, including person-job fit, person-supervisor fit, person-group fit and person-organization fit (Van Vianen et al., 2011). For instance, a person might demonstrate the good person-job and person-supervisor fit and poor person-group and person-organization fit. These issues have led to the increasing attention to values congruence and subsequently, to the increasing number of investigations in the area.

It appears that PO fit is interrelated with culture, norms and values of organization and thus, PO fit considers a good match between the own values of employees and the values of organization (Van Vianen et al. 2011). Notably, both values of individuals and organizations are stable characteristics, which can be compared and the relationships with various work characteristics can be investigated. PO fit is significant for both employees and organizations due to work satisfaction, organizational commitment, turnover intentions and performance (Alnacik et al. 2013). For instance, the studies confirmed the interrelations of PO fit and higher teacher satisfaction rates (Ellis et al. 2017), PO fit and nurse faculty’s organizational commitment to the academic organization (Gutierrez et al. 2012). Meanwhile, the relationships of PO fit and performance is less obvious. While meta-analysis carried out by Hoffman and Woehr (2006) revealed that PO fit is related to the task performance, the investigations in the high education context did not support this assumption (Jin et al. 2018). Considering the influence on attitudes and behaviour of individuals, PO fit appears to be vital in job applicants’ organizational choices and hiring decisions (Van Vianen et al., 2011). The applicants usually seek for organizations with similar values, remain with organizations and make the decisions to leave if values are incompatible. To conclude, individual values are able to be compared with the broader context in order to establish PO fit (Van Vianen et al., 2011). Hence, values congruence and organizational commitment requires more comprehensive investigation.

1.2. Values congruence and organizational commitment

Organizational commitment has attracted various scholars, working in organizational behaviour domain, and a number of researches has steadily increased in the past few decades. The focus on development and consequences of commitment extended both theory and research. Meanwhile, the studies, focused on some other issues, included organizational commitment as a separate variable. Thus, the opinion that “organizational commitment has begun to rival job satisfaction” has started predominate in scientific literature (Meyer et al. 1993). Though different directions of research can be traced, it appears that organizational commitment is complex and multidimensional construct. The interpretations of definition include commitment to employment, profession, career and etc. However, the concept, suggested by Mayer and Allen (1991), refers to the employees’ feel-
ings of obligation to stay with organization. The concept integrates three forms, i.e. affective, normative and continuance commitment. Notably, affective commitment refers to “identification with, involvement in, and emotional attachment to the organization, in the sense that employees with strong affective commitment remain with the organization because they want to do so” (Yousef 2017). Meanwhile, continuance commitment is inter-related to the costs of leaving organization and thus, employees remain with organization because they need to. Finally, normative commitment refers to a sense of obligation to organization (Meyer et al. 1993). While three dimensions of commitment are supposed to be important, affective commitment gained a separate attention as efficient measurement of organizational commitment. The scholars refer to affective commitment as “the relative strength of an individual’s identification with and involvement in a particular organization” (Shipton et al. 2016). Thus, the studies confirm interrelationships of affective commitment and various outcomes, such as quit intention, levels of stress and citizenship behaviour (Ertas 2015; Shipton et al. 2016). Notably, employees with higher affective commitment in comparison to employees with higher continuance and normative commitment demonstrate higher initiative, motivation and input into organization’s performance.

Organizational commitment matters since public organizations across developed countries are experiencing retention problems due to competitive job market and shortage of professional skills (Korsakienė et al. 2015, Shipton et al. 2016, Korsakienė et al. 2017, Stankeviciene et al. 2017). These issues have led the scholars to investigate what factors contribute to the higher organizational commitment. A stream of studies documented that organizational culture plays an important role in the area of organizational commitment. Namely, the following factors are assumed to be significant for commitment of employees: teamwork, trust, procedural justice, distributive justice, organizational support, and etc. The study performed by Dwivedi et al. (2014) disclosed that organizational commitment is sensitive to proaction, confrontation, trust, authenticity, experimentation, and collaboration. Meanwhile, some scholars assert that organizational subculture matters more to commitment than organizational culture (Lok and Crawford 1999). Thus, the above presented discussion leads to the conclusion that a good match between person’s and organization’s values and norms let to overcome retention issues of organizations.

1.3. Investigations of values in defence organizations’ context

Globalization, economic development and the diversity of mass-media appear to be the driving forces, impacting social changes. Meanwhile, system-level changes contribute to the changes of individual-level values, beliefs and behaviours. Thus, the rise of individualism and self-interest are well documented in scientific literature. European values study revealed cultural and social changes of different European countries, what led to the conclusion that changes depend upon the stage of socio-economic development and historical factors (European values study 2018). A close look at the values in Lithuanian society revealed the significance of various work-related facets, such as wages, possibility to demonstrate initiative, interesting job and etc. However, the increasing importance of wages demonstrate that changes of values are sensitive to economic and political context (Žiliukaitė et al, 2016). Finally, broader context and observed changes influence performance of organizations.

The investigations of person-organization fit in defence organizations’ context were less developed. Meanwhile, a number of studies were conducted aiming to investigate the attitudes of individualism and self-fulfilment and their impact on Western armed forces (Johansen et al. 2014). The research conducted by Moskos (1977) assumed military service as occupational work or “just another job”. Notably, monetary rewards, well-organized work hours and family have become the priorities and thus, contribute to the self-interest values. Meanwhile, Battistelli (1997) expanded the theory of Moskos (1977) by arguing that individualism is a result of occupation and postmodernism. Thus, a stream of studies aimed to investigate how individualism and self-fulfilment impacted military identity. For instance, the research carried out by Johansen et al. (2014) confirmed that individualism negatively predicted organizational commitment of Norwegian military academy cadets. The research conducted by Yu (2015) investigated values of military cadets in Taiwan and disclosed that socially competent type of individuals best satisfies the value demands of the military. The studies carried out in Lithuania confirmed the assumption that Lithuanian armed forces demonstrate both facets: postmodern and modern (Novagrockienė 2005). For instance, monetary rewards were indicated as the motive to join international mis-
sions (Miniotaitė, 2012, p.177). While investigations focused on the changes of military identity, organizational identity and broader social context (Kazlauskaitė-Markelienė 2016), person-organization fit and organizational commitment were almost neglected factors.

2. Methods

2.1. Sample and data collection

The data was collected through the survey carried out in the selected military unit of Lithuanian Armed forces. The survey investigated values congruence and interrelationships with organisational commitment. The questionnaire was elaborated and personnel of the selected unit were questioned in 2016. Considering the structure of Lithuanian Armed forces and allocation of various units in different territory of Lithuania, the decision to investigate one unit was made. The convenience sampling technique, i.e. snowball method was applied. Notably, snowball method requires to start investigation from a small group of accessible subjects (Soriano 2013). The small group is used for the purpose to recruit others who meet the required criteria. The selection of snowball method was grounded on the following advantages: 1) the selection of initial group can lead to a more representative sample; 2) the method is useful when the issues to find the participants appear (Soriano 2013). Thus, targeting chiefs of staff resulted in appropriate number of returned questionnaires.

In total, 56 respondents completed the survey. About 70.9% of the respondents were male. In terms of age, about 38.2% were 26-30 years old and 41.8% were 36-45 years old. Chiefs of staff comprised 20% and specialists 80%. In terms of employment, about 29.1% of the respondents had less than 2 years job tenure, about 27.3% of the respondents had 3-10 years tenure, about 21.8% of the respondents had 11-19 and more than 20 years job tenure. In terms of education, about 78.2% of the respondents had higher education.

2.2. Variables and measures

Value congruence. The literature suggests direct and indirect measurement of value congruence (Ryu 2015). Notably, direct measurement is applied, aiming to assess the subjective perception of value congruence. Thus, the respondents are asked to indicate how they perceive the presence of good fit. The example question is “To what degree do you feel your values ‘match’ or fit this organization?” This approach is grounded on the instrument developed by Cable and DeRue (2002). Meanwhile, indirect assessment aims to investigate individual preference and organizational actuality. The respondents are asked to answer to the following groups of questions: 1) the questions about individual preferences and 2) the questions about organisation’s actuality. For example, the respondents are asked to identify the degree to which employees’ involvement into decision making process is preferred by the respondents, followed by a question, investigating the degree to which the value of involvement into decision-making process is preferred by organisation. Considering prevailing investigations, this research is grounded on indirect measurement. The investigations carried out by various scholars applied the competing values framework (Cameron and Quinn, 2011), the organisation culture profile (O’Reilly et al. 1991), congruence of organisational culture and values’ taxonomy (McDonald and Gandz 1991). However, the developed instruments are more suitable for business organisations and are very extensive. Considering peculiarities of investigated organisation, the decision to rely on the instrument developed by Vveinhardt and Gulbovaitė (2016) was made. Thus, the questionnaire included social values (nine items), professional values (ten items), moral values (five items) and physical values (four items). The responses to the questions were given on a five-point scale ranging from (1) “strongly disagreed to (5) “strongly agreed”. Calculated Cronbach’s α for individual social, professional, moral and physical values are as follows: 0.736; 0.688; 0.733; 0.610. Meanwhile, calculated Cronbach’s α for organizational social, professional, moral and physical values are as follows: 0.868; 0.841; 0.775 and 0.768. Value congruence was calculated considering the approach, suggested by Amos and Weathington (2008), i.e. by subtracting the degree to which the respondents believed a value should exist from the degree to which they felt a value existed.

Organisational commitment. Following previous studies, organisational commitment was assessed by applying
Meyer, Allen and Smith (1993) affective, normative and continuance commitment scales. The scales demonstrated high validity in various studies. The responses to the questions were given on a five-point scale ranging from (1) “strongly disagreed” to (5) “strongly agreed”. Calculated Cronbach’s α for organizational commitment is equal to 0.863. Meanwhile, calculated Cronbach’s α for affective, normative and continuance commitment are as follows: 0.875; 0.825; 0.756.

Propensity to leave. The propensity to leave was assessed by three questions scale suggested by Jaiswal et al. (2015). The example question is “I often think about leaving my organization”. Considering the fact that low values regulate state pensions of military personnel, additional question was included: “I will probably serve my full term in military till the age of the state pension”. The responses to the questions were given on a five-point scale ranging from (1) “strongly disagreed” to (5) “strongly agreed”. Calculated Cronbach’s α =0.775.

Control variables. Control variables such as gender, age, job tenure, job position, rank category and education were included. First, gender was controlled because men are more inclined to remain in organisation (Schofield et al. 2018). Second, job position and rank category were controlled considering the fact that job promotion positively correlates with job satisfaction and subsequently, intentions to remain in organisation (Jaiswal et al. 2016). Third, job tenure was controlled because longer job tenure predicts the retention of personnel (Schofield et al. 2018).

2.3. Analytical approach

The reliability test was conducted by applying Cronbach’s alpha coefficient. The data disclosed internal consistency of applied scales. Notably, common method biases are likely due to the fact that the data for both the predictor and criterion variable are obtained from the same person and in the same measurement context. Thus, some techniques were applied. Firstly, grounded on the suggestions provided by Podsakoff et al. (2003), a psychological separation was applied. Hence, a cover story did not disclose the measurement of the propensity to leave (predictor variable) and interrelationships with the measurement of value congruence and organisational commitment. Secondly, Harman’s single factor test was applied. Thus, all variables were loaded into explanatory factor analysis and the unrotated factor solution was investigated. The explanatory factor analysis has led to eighteen factors and the most significant factor accounted 18.78% of the data variance. Finally, multiple regression analysis was conducted aiming to predict intentions to continue and organizational commitment.

3. Results

First, the descriptive analysis was conducted. The data of descriptive analysis are provided in Table 1. The results let us reveal that intention to continue (KL) is positively associated with organisational commitment (OI) (r=0.601, p<0.01). A close look at the separate dimensions of organisational commitment revealed the significant positive correlation between intention to continue (KL) and affective commitment (EI) (r=0.558, p<0.01). Meanwhile, the significant positive correlations between intention to continue (KL) and normative commitment (NI) (r=0.397, p<0.01), between intention to continue (KL) and continuance commitment (TI) (r=0.310, p=0.05) are identified but at a lower level. In addition, the significant positive association between intention to continue (KL) and general value congruence (BVA) (r=0.284, p<0.05) was revealed. Notably, the significant positive correlations between intention to continue (KL) and moral values congruence (DVA) (r=0.446, p=0.01) and between intention to continue (KL) and physical values congruence (FVA) (r=0.405, p<0.01) are observed. Gender (LT) demonstrates negative and weak association with professional values congruence (PVA) (r=-0.327, p<0.05). Considering the fact, that the higher values were assigned to women, professional value congruence is tended to be higher for men. Notably, some gender differences were observed by other investigations focused on work values. For instance, the studies reported that men ranked influence, independence, responsibility and pay higher than women (Elizur 1994).
Table 1. Mean, standard deviation and correlation of variables

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<td>-0.015</td>
<td>0.233</td>
<td>0.902**</td>
<td>0.685**</td>
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<tr>
<td>Moral values congruence (DVA)</td>
<td>-0.48</td>
<td>0.58</td>
<td>0.446**</td>
<td>0.276*</td>
<td>0.295*</td>
<td>0.118</td>
<td>0.218</td>
<td>0.772**</td>
<td>0.533**</td>
<td>0.691**</td>
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<tr>
<td>Physical values congruence (FVA)</td>
<td>-0.79</td>
<td>0.77</td>
<td>0.405**</td>
<td>0.425**</td>
<td>0.524**</td>
<td>0.099</td>
<td>0.458**</td>
<td>0.745**</td>
<td>0.549**</td>
<td>0.563**</td>
<td>0.550**</td>
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<tr>
<td>Gender (LT)</td>
<td>1.29</td>
<td>0.46</td>
<td>-0.022</td>
<td>-1.76</td>
<td>-1.152</td>
<td>0.047</td>
<td>-1.24</td>
<td>-2.06</td>
<td>-1.43</td>
<td>-3.27*</td>
<td>-1.50</td>
<td>0.04</td>
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<tr>
<td>Age (AM)</td>
<td>2.55</td>
<td>0.81</td>
<td>-0.155</td>
<td>-0.037</td>
<td>0.076</td>
<td>0.015</td>
<td>-0.016</td>
<td>-0.008</td>
<td>0.016</td>
<td>-0.005</td>
<td>-0.174</td>
<td>0.047</td>
<td>0.099</td>
<td></td>
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<tr>
<td>Education (IŠ)</td>
<td>4.15</td>
<td>1.16</td>
<td>-0.030</td>
<td>0.017</td>
<td>0.090</td>
<td>0.012</td>
<td>-1.152</td>
<td>-1.76</td>
<td>-1.143</td>
<td>-2.64</td>
<td>-1.09</td>
<td>-0.90</td>
<td>0.320*</td>
<td>-0.066</td>
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<tr>
<td>Rank category (KL)</td>
<td>1.73</td>
<td>0.73</td>
<td>-0.204</td>
<td>-0.073</td>
<td>0.003</td>
<td>-0.009</td>
<td>-0.080</td>
<td>-0.035</td>
<td>-0.051</td>
<td>0.058</td>
<td>-1.39</td>
<td>-0.085</td>
<td>-0.196</td>
<td>0.591**</td>
<td>0.174</td>
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<tr>
<td>Job position (PA)</td>
<td>1.80</td>
<td>0.40</td>
<td>0.082</td>
<td>-0.093</td>
<td>-0.082</td>
<td>-1.24</td>
<td>0.026</td>
<td>0.037</td>
<td>0.111</td>
<td>-0.037</td>
<td>0.148</td>
<td>0.074</td>
<td>0.120</td>
<td>-0.292*</td>
<td>-0.237</td>
<td>-0.545**</td>
<td></td>
</tr>
<tr>
<td>Job tenure</td>
<td>2.36</td>
<td>1.13</td>
<td>-0.121</td>
<td>-0.007</td>
<td>0.126</td>
<td>-0.041</td>
<td>0.071</td>
<td>0.106</td>
<td>0.071</td>
<td>0.139</td>
<td>-1.136</td>
<td>0.183</td>
<td>0.034</td>
<td>0.728**</td>
<td>-0.048</td>
<td>0.716**</td>
<td>-0.407**</td>
</tr>
</tbody>
</table>

Note. N=55. *p<0.05, **p<0.01. Gender coded as men, 1; women, 2; education measured from 1 (secondary education) to 5 (high university education); age measured from 1 (by 25 years age) to 4 (more than 46 years age); rank category measured from 1 (soldier) to 3 (officers), job position coded as having subordinates, 1; without subordinates, 2; tenure measured from 1 (less than 2 years) to 4 (more than 20 years); other variables on five-point scales.

Source: developed by author
Secondly, a multiple regression analysis was conducted aiming to predict intentions to continue. Self-reported intention to stay was dependent variable, while organisational commitment and general values congruence – independent variables. R square and adjusted R square are equal to 0.308 (p=0.000) what let us conclude that model explains 30.8% of data variations. However, general values congruence was statistically insignificant (β=0.215, t=1.078, p = 0.286) and thus, the decision to eliminate the variable from the model was made. The modified model explains 29.3% of data variance. R square and adjusted R square are equal to 0.293 (p=0.000). The linear regression model is as follows: Y(intention to stay) = 1.023 + 0.833 (organisational commitment) + e. Thus, the results demonstrate that higher organisational commitment increases intentions to continue. A close look at separate components of organisational commitment revealed that affective commitment increases intentions to stay. R square and adjusted R square are equal to 0.322 (p=0.000) what let us conclude that model explains 32.2% of data variations. The linear regression model is as follows: Y(intention to stay) = 1.459 + 0.623 (affective commitment) + e. The obtained results are in line with other investigations, demonstrating the strong relationship of affective commitment and intentions to continue (Alniacik et al. 2013). The scholars assume affective commitment as more effective measurement of organizational commitment what let us explain that affective commitment would lead to higher performance and subsequently higher probability to remain with organization.

Thirdly, a multiple regression analysis was made aiming to predict affective commitment. Notably, affective commitment was dependent variable, while social values, professional values, moral values and physical values congruence were independent variables. R square and adjusted R square are equal to 0.259 (p=0.000) what let us conclude that model explains 25.9% of data variations. However, social values congruence (β=0.288, t=1.317, p = 0.194), professional values congruence (β=0.300, t=-1.106, p = 0.274) and moral values congruence (β=0.165, t=0.748, p = 0.458) were statistically insignificant and thus, the decision to eliminate these variables from the model was made. The modified model explains 21.9% of data variance. R square and adjusted R square are equal to 0.219 (p=0.000). The linear regression model is as follows: Y(affective commitment) = 3.906 + 0.437 (physical values congruence) + e. Thus, the results demonstrate that higher physical values congruence increases affective commitment.

Conclusions

The paper discloses interrelationships of values congruence, intentions of personnel to continue and organizational commitment in selected organization. First, the findings confirm the assumption that higher affective commitment increases intentions to stay with organization. In addition, the conclusion that personnel demonstrate identification with organization can be made.

Second, the study demonstrates that physical values congruence is positively interrelated with affective commitment. Hence, the sense of favourable social guarantees, benefits, appropriate work place and health considerations influence individual’s identification with organization. Meanwhile, the research did not disclose the relationships between normative commitment and continuance commitment. In addition, interrelationships between social values, professional values, moral values and affective commitment were not indicated. The findings have to be interpreted with caution due to study limitations. First, a limited number of personnel was questioned. Thus, future investigations have to involve more respondents and focus on few units. Second, the research focused on limited number of values and other values (e.g. spiritual, economic and etc.) could be investigate in the future. Third, the future studies could consider interrelationships of affective commitment and some other outcomes (e.g. citizenship behaviour and etc.). The implications for top-level management lie in the possibility to monitor values congruence and subsequently, increase organizational commitment of staff.

References


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GLOBAL SECURITY AND ECONOMIC ASYMMETRY: A COMPARISON OF DEVELOPED AND DEVELOPING COUNTRIES

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Abstract. This paper tackles the asymmetry of economic interests and geopolitics between developed and developing countries. Currently, the geopolitics presupposes that the majority of novel technologies are devised and designed in developed countries with their subsequent transfer to the developing countries. Moreover, in the context of the global crisis, the issue of de-dollarization is relevant from the political and economic points of view. Our specific focus is on the small oil countries and the issue how to get off the oil needle in the painless way. Furthermore, the paper analyzes the rise of cryptocurrency that is envisaged as the substitute of the U.S. dollar which has been the world most dominating currency for the last several decades.

This paper considers the global asymmetry which has the greatest impact on countries with economies dependent on energy exports. In the light of the diminishing returns from the sale of oil, we examine the ways for escaping this asymmetry. The authors consider the geopolitical asymmetry stemming from the dominance of the U.S. dollar, analyze the political situation and offer the pathways for the development of those economies where oil become an obstacle for economic development. The paper examines the ways of solving the above-mentioned problem by other states in detail and conduct the comparative analysis of the above issues in relation to the economy of Azerbaijan. From this case study we conduct a comparative analysis of the developed and developing countries taking into account the economic asymmetry and global economic and financial security.

Keywords: geostrategy, instability, anti-dollarization, business development, stock markets, gold standards, cryptocurrency,

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JEL Classifications: F30; F52; P10; P20

1. Introduction

International global security is pre-supposed by the asymmetry and polarization of hydrocarbon resources in a small group of developing countries and countries that yield the signs of the economies in transition (Balitskiy et al. 2014; Andreeva et al. 2016; Jobling and Jamasb 2017; Niño-Amézquita et al. 2017; Lisin et al. 2018). Historically, commodity markets have used U.S. currency as means of payment. However, active anti-dollar campaign is gradually unfolding in the world (Guliyeva and Rzayeva 2017). These efforts often lead to serious and not always positive and fruitful developments in global politics (Kalyugina et al. 2015; Koudelková et al. 2015; Andreeva et al. 2017). The purpose of the work is in discussing the following questions: What should be done to ensure that the rejection of the U.S dollar could be real and non-harming? What can the small develop-
What would be the suggestions for the ways for escaping the global asymmetry in the light of diminishing returns from the oil sale?

How to conduct a critical analysis of internal market’s structure and find out why raw materials and semi-finished products are mainly dominated in the exports of developing countries?

With regard to the objectives outlined above, this paper is set to examine the steps that Azerbaijani policy-makers should take towards the development of the non-oil sector. For the purposes of this paper, we are not taking into consideration such sectors of economy as tourism, agriculture, ICTs and other related branches. Moreover, this paper is aimed as presenting the authors’ own novel vision of solving the de-dollarization problem from positions of a small developing country represented hereinafter by Azerbaijan.

2. Background and literature review

According to Lemann (2011), it was Andrew W. Marshall, the director of the United States Department of Defense’s Office of Net Assessment, who was one of the first to apply the term “asymmetry” to the military-political sphere. Marshall paid attention to possible asymmetric warfare with such, apparently, symmetric opponent as the USSR. Actually, at first the term “asymmetric relations” had a military strategic importance and only later became widely used in the political and economic reasoning. In addition, Scholvin (2016) reveals in detail how asymmetry turned out to be an important aspect mostly in each known form of geopolitical relations. Furthermore, Meinhardt (2002) points out that the asymmetric strategy always presents in relationships. Arreguin-Toft (2001) suggests that all modern asymmetric conflicts can be understood when they are considered through the prism of the strategy and concludes that asymmetry is a strategy and strategy is an asymmetry.

Moreover, Bourguignon and Morrison (2002) describe national economics in the framework of the world economy and international economic relations in the 1990s and 2000s are also characterized by the asymmetry of the states’ developments. This was reflected primarily in the greater inequality between them. The system transformation crisis of the 1990s changed the place of the post-Soviet countries quantitatively and qualitatively, throwing them back far back (Zlyvko et al. 2014). According to King (2009) and Lau et al. (2000), successful development of China’s economy against the background of post-Soviet countries’ national economies also increases asymmetry of the world economy. Investigating relations with Asia (Schaffer, 2002) determines that even within certain, especially large multinational countries, there is practically no homogeneity of economies and asymmetry in their development is also observed. This fact also applies to such a stable regional community as the European Union (EU).

The greatest asymmetry of interdependence is inherent in the relations of developed countries with the most backward and poor countries of the world. The latter do not have the resources of strategic raw materials, they are not competitive producers of industrial and consumer goods and are not promising markets for the products of developed countries. These countries incidentally, depending on environment of commodity markets, can influence reproduction in the industrial center; however, essential dependence on this center dominates in system of their world economic relations. Including Azerbaijan, the economic dependence of developing countries on developed countries is manifested primarily in the fact that developed countries are “pure” exporters of capital to developing countries, whereas developing countries are in fact the debtors of developed
ones. In foreign trade, economic dependence is manifested not only in the overall asymmetry of exports and imports, but also primarily in their market’s commodity structure (Ehrenberger et al. 2015; Varanavicius et al. 2017). Raw materials and semi-finished products are mainly dominated in the exports of developing countries. Today USA represents the largest importer of oil and the only “superstate” which monopolized the right – in the sphere of geopolitics of fuel – to convert geopolitics of spaces into geopolitics of streams, geostrategy to geo-economy and vice versa. In response, there is a tightening of access policy for hydrocarbon resources by oil-producing countries, called “resource nationalism”. The geopolitics of asymmetry, unexpected forming the fanciest combinations for reaching the real horizons of multipolarity, today is not restrained by any ideological, confessional, political or social criteria (Strielkowski et al. 2016).

With regard to the above discussion, one can see that the Azerbaijani government put its bet on the development of non-oil sector. Currently, such fields of economy as agriculture, tourism, information technologies and textile industry are being invested as an alternative to the “oil needle” (Tvaronavičienė et al. 2015; Zemlickiene et al. 2017; Veselovsky et al. 2018). With regard to this, the development of entrepreneurship which occupies an important place in social and economic policy, might be seen as a key element of the investment processes. In addition, investment processes define scientific and technical progress, modernization of economy, growth rates of branch and regional economies in essential degree (see e.g. Vasylchak and Halachenko 2016; Jankelová et al. 2017; Melas et al., 2017; Tvaronavičienė et al. 2018). Our paper considers the current state of this economic area, presents the dominant indicators for Azerbaijan in this sector. As a continuation of the theme of entrepreneurship development, the authors examine in detail the stock market, considering that economy is based on the functioning of the corresponding financial system, and the most important place is occupied by the financial market on which there is the movement of money (capital).

3. Main research focus: issues and controversies

Modern researches note a relatively high degree of asymmetry in the geopolitics of energy and fuels. This is because the processes of the global economy are often characterized by both uniqueness and high degree of uncertainty (Brożyna et al. 2018; Iorio et al. 2018). As a result, forecasting the situation with geostrategic instability is difficult to assess, and therefore, there are difficulties associated with obtaining reliable information about it. The authors’ research aims to assess the degree of information asymmetry in the context of this phenomenon’s significance for developing countries, taking into account their absolute dependence on the dollar.

It is difficult to overestimate the role of oil in the economy of Azerbaijan. In Azerbaijan, smaller proportion of employed in the industry gives more of GDP, reflecting the predominantly mineral-raw material orientation. Recently there was a favorable situation on the world market for raw materials. Thanks to the global economic crisis, the “resource blessing” has turned into a “resource damnation”. This theory points to the interrelation between large revenues from the natural resources’ export and the weak economic development of the country and reflects the suppression of market development and the decline of other economic sectors’ competitiveness, the increase of the national currency, inflation and unemployment.

One can see that the abnormal revenues from the mineral resources’ export, as well as an excess of this resource within the country generate deformation of economy in all cases, regardless of the political system and the applied economic policy (Karl, 2007). Correlation of the rate of Azerbaijan GDP’s growth with the oil prices’ growth rate on world markets represents a parallel process. It is important to emphasize that this is not even a correlation with the rate of oil prices, namely with the rate of prices’ growth, i.e. for the growth of the Azerbaijani economy. How to solve the resource damnation problem?

Quickly coping with the Dutch disease, the symptoms of which are evident in Azerbaijan is impossible. There are no simple recipes here. Nevertheless, the problem of price volatility and export revenue is solved quite simply. If we know that oil prices sharply change, we can save them for a rainy day, for those periods when there is a decrease in income. Countries that export resources - oil, gas, and so on - can create so-called national welfare funds that have two goals. The first is the savings purpose designed to postpone a part of the income from
oil for pensions and tax exemption in future. The second purpose of such funds is stabilization funds directly connecting with volatility. Oil prices are falling: we take means from these funds and spend for current needs. When the prices are high, then, on the contrary, we keep our large income in the fund. Accordingly, we smooth out state revenues and solve budget problems. However, there are problems with stabilization funds. Oil prices are volatile, but, as economists often say, they are sustained, and if they fall, they can stay on a very low level for a very long time (Knittel and Pindyck 2016).

Not only the oil countries possess the national welfare funds, there are metal funds, copper funds, there are funds completely unrelated to raw materials, as in China and Singapore. The largest fund is the Government Pension Fund of Norway. The Norwegian government does not spend money coming from oil and gas but lives only on interest.

The State Oil Fund of the Azerbaijan Republic was established in 1999 (actually began to operate in 2001). The revenues of the State Oil Fund are formed, first, by selling oil remaining at the disposal of Azerbaijan in accordance with production sharing agreements. In addition, the fund receives income from the concession of land in oil-bearing areas, the leasing of fixed assets, oil transit, the difference between the contractual and sales price of exported oil, as well as bonuses and income from the profitable use of assets.

The oil exporting countries are trying to change the development model based on the export of this raw material. However, the strategies of economic modernization need to be reoriented to new sources of national income. A purposeful economic policy can ensure the effective use of foreign exchange earnings from oil exports, and therefore the role of financing advanced sectors of the economy based on ICT raises. Developing countries seek to shift economic growth from the oil and gas production sector to sectors not related to the extraction and sale of crude oil and natural gas in order to reduce dependence on exhaustible oil reserves, the volatility of the world oil market, to change the economic structures based on foreign labor, to solve the problem of social burden on the budget.

4. Entrepreneurship and economic development

At the present stage of Azerbaijani economy development, foreign investments are directed mainly to the oil industry. However, proportional economic development requires redirection of revenues from the sale of oil and oil products to the development of the non-oil sector. The increase in investments is necessary for the purposes of economic growth, limiting inflation and unemployment, creating new jobs. Registration of companies in Baku is carried out on the basis of unified principles, which are prescribed at the legislative level. The process of creating a limited liability company is very simple: it requires only 7 procedures and 11 days. This is much faster than the corresponding average for the countries of Eastern Europe and Central Asia. The whole process can be done online and registration usually takes 2-3 days. Currently, there are no restrictions on the minimum authorized capital. Article of the Civil Code of the Republic of Azerbaijan states says that the amount of the authorized capital cannot be less than the amount established by the relevant executive authority.
Land is granted only for rent to persons who are not citizens of the Azerbaijan Republic, individuals and legal entities of foreign countries. Some lands constitute the exclusive property of the state; rules of their usage and leasing are carried out in the order prescribed by law. The lease cannot be longer than 99 years. As a rule, contracts are usually concluded for 30 years and give the right to divide the land into sublease or leased land. There are no restrictions for the maximum quantity of land resources, which can be concentrated in one hands. In Azerbaijan a geographic information system providing the collection, storage, processing, access, display and dissemination of spatially coordinated data (spatial data) and, accordingly, centralization of information in one access point is absent. Foreign direct investments in Azerbaijan in the fourth quarter of 2016 increased by 1895 million US dollars, reaching a record level of 2231 million US dollars in the fourth quarter of 2014 and a record of 586 US million dollars in the third quarter of 2009 (Figure 1). Compared to the beginning of the 21st century, the overall investment climate in Azerbaijan is gradually improving, although serious problems remain.

The paradox is that everyone knows about these problems, but they remain unresolved, giving rise, in turn, to new problems. Over the past few years, the Azerbaijani government has worked to integrate the country more fully into the world market, attract foreign investment, diversify economy and support growth. GDP growth of 2.8% in 2014 was due to non-oil economy and long-term public investment (Figure 2).

About 95% of the export income of Azerbaijan is the share of oil and gas products (Figure 2). Economic diversification and large foreign investment for the further development of energy sector are declared as government’s goals but ineffective state bureaucracy, weak legal institutions, requests for illegal payments for cross-border operations and predatory behavior of related monopolistic interests prevent investments at non-oil sector and present problems for foreign companies. Over the past few years Azerbaijan has been working to improve its regulatory system, but limited transparency and allegations of corruption remain key problems in this area. According to the legislation of Azerbaijan, foreign investors can engage in investment activities not prohibited by law.

Figure 1. Foreign Direct Investment (FDI) in Azerbaijan (1995-2016), % of GDP

When it comes to business acquisition in Azerbaijan, private entities can freely create, acquire and dispose of interests in enterprises. The Law on the Protection of Foreign Investments protects foreign investors from nationalization and requisition, with the exception of certain circumstances. In February 2015, Azerbaijan devalued its local currency manats (AZN) by 35% in order to adapt to the decline in oil prices, putting pressure on the currency reserves of the Central Bank. Then in December 2015 there was a second devaluation of 48%. In general, however, there are no restrictions for converting or transfer of the means connected with investments in freely used currency at the market rate. The sphere of financial services is weakly competitive both on the external and internal markets. Corporate social responsibility is a relatively new concept in Azerbaijan, and is associated only with assistance programs.

5. Securities market and the investment policy

In the economy, there is a constant turnover of financial resources, which subjects are households, enterprises, the state and various financial institutions acting as intermediaries in the system of relations. In the process of management, some subjects have a need for means to expand their activities, while others accumulate savings. The distribution of means occurs through the formation of funds: centralized or owned by the state and decentralized or owned by the subjects of production. Until recently, the Azerbaijani government has practically ignored the possibility of attracting the population’s financial resources for infusion into the national economy. Practically bank deposits remained the only financial instrument to fill up the budget for the population. Nevertheless, two waves of devaluation of the national currency called “manat”, and further closing of some banks (as of today, from 45 banks remained acting 33 credit institutions) considerably lowered trust of population to the banking system. In the developed countries of the world, income from securities is an important additional source of money for the population. The population provides the bulk of investment in the stock market, if it has incomes that exceed consumption costs. If the consumer has a larger disposable income, then more goods will be produced and imported. There are special indicators characterizing the willingness of consumers to spend money on the acquisition of various goods. Some of these indicators are important for foreign exchange markets, as well as high consumer demand stimulates the recovery of production in many sectors and can serve as a basis for economic growth. Conversely, the weakness of consumer demand or its decline are the signals and may become the cause of a slowdown in the economy. Focusing on these indicators, central banks can change interest rates or use other levers of financial policy, which directly affect the exchange rates.
In view of the fact that many economic indicators show economic cycles, but each of them does so in its own way, it is natural to attempt constructing from several indicators one which, thanks to the generalization (averaging), would better predict the cycles than each does individually. The composite leading indicator – Leading Economic Indicator (LEI) combines 11 indicators for this purpose:

- Average duration of the working week in the manufacturing sector;
- Average weekly number of applications for payment of state unemployment insurance;
- New production orders for consumer goods and materials;
- Efficiency of deliveries;
- Contracts and orders for capital goods and equipment;
- Obtaining permits for housing construction;
- Unfulfilled production orders on durable goods;
- Change in prices for raw materials;
- Stock Index S & P500;
- M2 Monetary aggregate;
- Consumer expectations index (University of Michigan’s Consumer Expectations Index).

The LEI is based on the idea that the main motivating force in the economy is the expectation of future profits. In anticipation of profit growth, companies are expanding production of goods and services, investing in new plants and equipment; accordingly, this activity decreases when a decline in income is foreseen. In Azerbaijan the GDP YoY (year over year) shrank 0.9 percent year-on-year in January-May of 2017, compared to 4.2 percent contraction a year ago. LEI in Azerbaijan averaged 9.87 percent from 2006 until 2017, reaching an all time high of 116.10 percent in September of 2012 and a record low of -4.50 percent in April of 2016.

Index of Consumer Confidence is an attempt to measure consumer optimism, has a limited impact on the market, as it may not reflect the real state of the economy. However, it is traditionally used to forecast trends in employment and the general state of the economy. The growth of the index value is a positive factor for the development of the national economy. As a reflection of the economic situation, consumer confidence in Azerbaijan declined in the third quarter of 2014 to 23.80 points, being 25 points in the second quarter of 2014. Consumer confidence in Azerbaijan averaged 25.25 from 2013 to 2014, reaching a maximum of 26.35 points in the first quarter of 2014 and a record low of 23.80 points in the third quarter of 2014. Personal Income index includes the salaries of workers and employees, income from rent, dividends, income from bank interest, payments for social insurance, etc. Personal income in Azerbaijan increased from 35.924.80 million manats in 2014 in to 37,948.30 million manats in 2015. This indicator averaged 24101.00 million manats from 2000 to 2015, reaching a maximum of 37.948 million manats in 2015 and a record low of 3748.00 million manats in 2000.

Personal Spending (Consumption) index reflects the change in spending of funds to meet personal needs. Has a limited impact on the market. Consumer spending in Azerbaijan increased from 9.94 bn manats in the third quarter of 2016 to 9.125 bn manats in the fourth quarter of 2016. This indicator in the period from 2001 to 2016 averaged 3.767.86 million manats, reaching a maximum of 9,190.40 million manats in the fourth quarter of 2015 and a record low of 700 million manats in the first quarter of 2001. CPI represents the main indicator of inflation, measures the changes in the goods and services’ prices included in a fixed consumer basket. This indicator increased from 141.40 points in December 2016 to 144.70 points in January 2017, an average of 115.69 points from 2011 to 2017 and reaching a record level of 144.70 points in January 2017. The minimum record was fixed at the level of 105.30 points in January 2011.

As mentioned above, population is the main supplier of resources to the stock market. Credible figures for Azerbaijan, disclosed above, leave no chance on successful development of this economic sector. Let us consider this situation in more detail. The securities market in Azerbaijan was established at the beginning of the 20th
century. Back in 1900, promissory notes and interest-bearing securities were issued in banks operating in Baku. The first shares were issued in 1913 after the approval of the Baku Merchants Bank’s Charter. In the era of the Azerbaijan Democratic Republic, the bill market also developed, but during the Soviet period it was limited.

On December 30, 1998, after the restoration of independence the State Committee for Securities was established to create and develop the securities market. The Committee is engaged in the adoption of regulations in the securities market, the emission and turnover of shares, the activities of securities market participants and investment funds, the licensing of related activities, as well as the market for debt securities. As shown in Musayev (2012), the economic reforms carried out in Azerbaijan in recent years have ensured the creation of an economic system operating on the basis of free market relations. The fundamental institutions of the market economy have been formed, including the legislative framework that consolidates new economic relations. For the stock exchange’s work securities that will interest all must be issued. In Azerbaijan, such large joint-stock companies as the State Oil Company of the Azerbaijan Republic (SOCAR), the organization for providing electricity to the country AzerEnerji, etc. belong to the state. As for public companies, they are open only formally, but in reality, too, belong to the state. Potential buyers do not believe that over time competitive monopoly organizations will give an opportunity to develop enterprises.

Nobody wants to share with part of own enterprise. However, the shares are essentially related to the transfer of part of the ownership rights to the shareholders. In addition, finally, as another reason of underdevelopment of the stock market in the country, we can cite the following argument – in Azerbaijan, there are few qualified personnel able to become, for example, independent brokers. Thus, the model of the undeveloped securities market in Azerbaijan is characterized by the fact that there are practically no national investment resources, national production cannot effectively consume foreign investment.

As noted above, oil is a trump card of all geopolitics, and the countries that have this card try to use it. The fact that foreign oil companies with billions of debts’ dollars, will pay for Iranian oil in euro, create the idea of the similar practices’ introduction in our country. Nevertheless, can Azerbaijan refuse the dollar in foreign trade and switch to the euro after two devaluations? And do we need this? For Azerbaijan, such step would be extremely dangerous, because limited influx of dollars is the main cause of instability in the financial market at present. The fact is that 90% of our exports are oil and oil products. The country has very few other dollar revenues. The price of oil is falling: the volume of the dollar coming to the republic is dropping, and the Central Bank is beginning to spend its foreign exchange reserves. The value of gold expressed so far in U.S. dollars, immediately starts to grow rapidly, both against the dollar, and against all goods-works and services. After a while in a certain market-defined trading range the oil-gold ratio will be stabilized naturally and the dollar will simply fall out of the formula which determines the price of oil and gold. On the contrary, the value of the dollar will begin to be measured in gold, as it should be and as it was throughout the entire monetary history of humankind. The value of national currencies has always been valued in money (i.e. in gold).

6. Conclusions and discussions

All in all, our results indicate that the accumulation of huge monetary and financial resources has an ambiguous impact on the economy of oil-producing countries. On the one hand, it creates unprecedented financial conditions for boosting the economic development of these countries. On the other hand, it generates such problems as, for example, inflation growth, deepening of structural disproportions (flawed development of the “non-oil” sector), and difficulties in the social sphere. The development of entrepreneurship is closely linked with the development of small enterprises, the formation of the middle class and is conditioned by both internal and external factors. Investment activity is associated with the processes of the labor international division, attracting foreign investment, the investment projects’ development.

The modern structure of the world in the postindustrial information space becomes very vulnerable. Therefore, in the very near future the development of oil fields with the correct configuration of the innovation process can move from massive technologies, requiring huge economic and industrial resources to point high-tech modules,
whose development requires not so much capital investment, as creative flexibility and avant-garde approach. The developing countries, of which Azerbaijan is an integral part of, should develop this side of strategic asymmetry in priority.

The main problem is the issue of the possibility of financial resources’ rational usage within the country for the purpose of its social and economic development. The desire to master other markets in the face of the declining efficiency of investments in the development of new oil resources can be considered as the most important prerequisites for the transition to a non-primary economy. This process disposal of raw dependence can be intensified by increasing investments in entrepreneurship and development of the stock market. The strategic goal of economic development of any country is foreign investments’ attraction. Foreign direct investments are of significant importance, they characterize the long-term interest of foreign investors in the development of economic activity. The stock market develops when investors appear on it.

In today’s world and under the current conditions, one has to state that countries like Azerbaijan should treat the idea of de-dollarization more restrainedly. First, if the country switches to calculations for oil and gas in manat, then the budget will lose additional income from devaluation. To date, since the beginning of the year, manat has depreciated more than 100% against the dollar and the euro. Transformation of manat into the international currency with a high probability will not lead to the stabilization of the national currency, but to its even greater volatility. Conversion of currency into freely convertible means that its circulation is not limited in any way, the state cannot influence it in any way, and its rate is determined only by speculation on the stock exchange. In this case the dependence on the dollar is only strengthened.

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Towards Sustainable and Secure Development: Energy Efficiency Peculiarities in Transport Sector

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Abstract. Sustainable and secure development of any country is considerably affected by energy efficiency of economy. Efforts directed to diminishing of energy resources consumed have to be directed to achieving multiple goals, ultimately impacting demand in energy resources. Hence, ultimate demand of energy resources depend on economic growth rates, economy structure, technological level, distribution of income and behavioral patterns, both of business companies and households. This paper is devoted to analysis of energy efficiency in transport sector of three selected European countries. The methodology of research is based on comparison on long-term tendencies of energy intensity in transport equipment segment. The long-term forecasting until year 2050 will be performed by using LEAP (the Long-range Energy Alternatives Planning system) software; ceteris paribus assumption will be selected. The countries selected for analysis are: Belgium, Bulgaria and Lithuania. The selected countries, we assume, would represent better developed European countries (represented by e.g. Belgium), and comparatively less developed European countries of different size (represented by Bulgaria and Lithuania). The juxatopsing of energy intensity change in long run, revealing mode of this change and comparison of cases of selected countries, would allow to reveal if energy efficiency of transport equipment converge. Since transport equipment sector embraces various modes of transport, additionally public roads sector will be tackled. We believe, that results obtained will signal what policy implications, if any, are necessary in order to direct transport users towards stewardship of energy resources through increase of efficiency of conventional energy resources and transfer to renewables in the nearest future.

Keywords: sustainable and secure development; energy intensity; transport; Belgium; Bulgaria; Lithuania

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JEL Classifications: Q01, Q28

1. Introduction

There is a lot of attention recently paid to multiple facets of sustainable development. Efficient consumption of energy is especially closely related to the aim of maintaining a sequent path towards gradual economic growth and more affluent future not to be followed by deteriorated environment in which we live. There is a lot of the latest literature devoted to both, to energy efficiency issues (Tvaronavičienė et al. 2015; Tvaronavičienė 2016; Melas et al.; Abrhám 2017; Tvaronavičienė et al. 2018) and concerns related to use of various sources of energy (Genys, D.; Krikštolaitis, R. 2017; Popp et al. 2018; Shakhovskaya et al. 2018). Going further, consumption of energy and composition of energy sources used (so called energy mix) affects not only of sustainability of de-
velopment, understood as economic development implemented with concern of environment sensitivity to pollution caused by development itself); consumption of energy currently is related to security of development. To put it in other way concerns about sustainable development has been transformed into concerns of sustainable and secure development (Tetsman et al. 2017; Kuril 2018; Tvaronavičienė 2018). Security facet here embraces energy security facets, which is a separate area of research. In the context of this research let us indicate that availability of energetic sources is one of key components of energy security. We could clearly state therefore that efficient energy consumption has become precondition not only of sustainable but of secure development as well.

2. Fundamental relationships between economic growth, energy consumption and pollution. Role of renewables and energy efficiency

Let us recall, what energy efficiency means. Energy efficiency is estimated by quantity of energy needed to perform one or another activity. Depending on technological process, level of technological advance for the same activity different quantities of energy can be used. Here is explanation of energy efficiency, provided by An office of U.S. Department of Energy “Energy efficiency refers to the activity or product that can be produced with a given amount of energy; for example, the number of tons of steel that can be melted with a megawatt hour of electricity. At the level of a specific technology, the difference between efficiency and energy intensity is insignificant — one is simply the inverse of the other. In this example, energy intensity is the number of megawatt hours used to melt one ton of steel.

At the level of the aggregate economy (or even at the level of an end-use sector) energy efficiency is not a meaningful concept because of the heterogeneous nature of the output. The production of a huge number of goods, the mixing of the transport of freight and people, and the variety of housing and climates makes an aggregate energy intensity number based on Gross Domestic Product (GDP), a number that disguises rather than illuminates. A simple intensity measure can be calculated (as Energy/GDP), but this number has little information content without the underlying sector detail.

The distinction between energy intensity and energy efficiency is important when multiple technologies or multiple products underlie what is being compared. While it would not be sensible to compare the energy efficiency of steel production with the energy efficiency of ethanol production, it is possible to examine the energy intensity of all manufacturing.“ (An office of U.S. Department of Energy https://www.energy.gov/eere/analysis/energy-intensity-indicators-efficiency-vs-intensity).

Hence, despite we strive for energy efficiency, indicator used for its estimation is specifically “energy intensity”. In our research we will compare forecasted energy intensities for transport sector of selected countries in order to reveal if that sector can be considered as equally (or not) efficient for different countries. If it appeared that forecasted for long-run (until year 2050) energy intensity is rather similar in taken countries we would conclude that energy efficiency converges. In classic economic theory it is claimed that majority of processes should converge, alas in reality this consistent pattern of development is being distorted by various forces. Returning to our research, if forecasted ceteris paribus energy intensity would differ considerably in selected countries, we would conclude that additional economic tools should be introduced into economic policy in order to facilitate conversation processes of energy intensity by pushing this indicator down by available economic policy instruments.

After clarification of meaning of energy efficiency and energy intensity and discussing rationale behind of juxtaposing of forecasted energy intensity results in long-run, let us list factors affecting level of energy intensity in economy of any country.

Here let us recall the fundamental relationship between economic growth and energy use: the more a country develops economically, the higher demand is for energy. Economic development inevitably is being followed by increase in energy use. If a country relies e.g. on oil or gas in its development process then availability and
affordability of those non-replenishable resources starts playing a role of increasing significance. Let us add here all infrastructure, which is needed to supply those energy sources to European country, let say. Here we start encountering with one more issue, i.e. protection of “critical infrastructure” (Šincāns et al. 2016; Plėta et al. 2018). Besides problems related to supply of energy, which is needed for economic growth, we encounter consequences of enhanced energy use. There is another consistent pattern, which is known as Kuznets curve. It says that the use on energy causes pollution of environment emitting CO₂ and other gases (called green gases) deteriorating our planet. At the certain point this pollution is being curbed, therefore Kuznets curve looks like inverted U instead of straightly increasing line. Alas, this bending of the inserted U down is not natural phenomenon. It is caused by economic policy tools enforcing companies use technologies protecting environment from degradation, deterioration. Therefore switch to renewable energy is one of tools of tremendous importance, which could facilitate preservation of our planet in the era of economic growth. Parallel to energy efficiency, which will be estimated via energy intensity indicator, has to be sequent increase via all possible means: technology, behavioral change directed towards energy stewardship, and economic policy, if necessary.

3. Materials and methods for analysis of forecasted energy intensity of transport in selected countries

Total energy intensity of a whole country depends on many factors, such as economic structure (different sectors of economy has energy intensity determined by technological process), behavior of households, which heat and cool their houses, use various appliances and equipment, use transport means. Ultimate aim of any society is, as it was already mentioned above, is to use energy as efficient as possible and to switch to renewable energy. Technological advance and attitudes play crucial role in the process of increase of energy efficiency at society level (Oganisjana et al. 2017; Jankalová, Jankal 2017; Zemlickiene et al. 2017; Radwan, Sakr 2017).

In this paper we will tackle specifically transport sector. Our aim is to clarify how energy intensity is going to change in this sector until year 2050 making ceteris paribus assumption. Let us recall that ceteris paribus assumption means that external conditions remain the same, i.e. GDP growth rate, population growth, economy structure, technology level, energy mix etc. If we decided to change this assumption, we already had modeling case. Than each assumption had be grounded, naturally. Below we introduce forecasting results, which were obtained by application of LEAP (the Long-range Energy Alternatives Planning system) software.

Let us examine long-term energy intensity change in transport sector of Belgium (Figure 1), Bulgaria (Figure 2) and Lithuania (Figure 3).
Figure 1. Forecasted energy intensity in transport sector of Belgium until year 2050

Figure 2. Forecasted energy intensity in transport sector of Bulgaria until year 2050
Before providing comments on the results of long-term forecasting let us clarify what is being embraced by transport by software LEAP, which has been used for obtaining of provided results. Hence, in the software used, it is assumed that the transport of each country is composed out of the following groups: “Passenger, Freight, An International, Pipelines, Non Specified” (LEAP the Long-range Energy Alternatives Planning system). Here we examine the change of energy intensity of the whole sector, therefore energy intensities of those “sub-sectors” are incorporated into the the resulting energy intensity of the transport sector. Natural question here may arrise about difference of composition of this sector in selected and any other countries. It is well known that different activities have will have differing energy intensities, and if to take an energy intensity of a sector incorporating those subsectors, then the total energy intensity would be affected by shares of activities, characterised by higher or lower energy intensities. We admit, that it is limitation of the research. Nevertheless, another insight is, that this limitation of research is of rather general character and is present in all researches, where energy intensities of any economic sectors, which is inevitably is comprised of specific activities, are compared.

4. Results

Hence, the results of forecasting allow us to come to the following insights. The first, for all selected countries diminishing energy intensity in long run, i.e. until year 2050, is characteristic. The second, the countries’ transport sectors currently have differ energy intensities; the differences, judging from the forecasted results, would remain rather significant in year 2050. We can observe, that Final energy intensity, measured in tonnes of oil equivalent per European Euro in Belgium currently has value of a bit above 0,0005 estimated, while, in Bulgaria this value is much higher and equals to 0,001 approximately. In Lithuania energy intensity is higher than in Belgium, but is of the comparable level to it: 0,0007 estimated. To conclude Bulgaria is significantly lagging behind in the area of energy intensity of transport sector. In the long run, all countries are expected to diminish their energy intensity, alas the ultimately reached energy intensity level signals about reserves for improving for Bulgaria in the considered area.

The concluding insights may be tested by providing forecasted share of road traffic activity (passenger public road) in the analyzed countries: Belgium (Figure 4), Bulgaria (Figure 5). We skip Lithuanian case here, since the results of modelling resemble the obtain data for Belgium.
The long-term modeling results partly reflect the current and future structure of transport sector in selected countries. We can observe that currently (in year 2018) the transport structure, if to judge from road traffic activity is rather similar in all selected countries (let us recall, that as it was already mentioned above, Lithuanian data is very similar to Belgium’s one). This observation supports insights formulated above generalizing current and expected situation in the area of transport energy intensity of Belgium, Bulgaria and Lithuania. Besides, one more insight could be suggested: it is expected that transport structure in the selected countries would converge. This prospect serves as additional supporting evidence for provided insights.
5. Discussions

Revealed differences in level of energy intensity of considered European countries naturally is followed by further discussion of factors impacting energy efficiently in overall economies, and the analyzed sector, specifically. The following factors, not elaborated above could be indicated (let us recall that in our research we focused on structure of a sector, as a factor affecting total energy intensity of a sector). Hence, the energy intensity in economy, including transport sector, is affected by distribution of income (Tvaronavičienė, Gatautis 2017; Dirzytė et al. 2017); both technological and social innovations, technology transfer capacity (Razminienė et al. 2016), social responsibility level (Dobrovolskiene et al. 2017). In order to make those factors work, respective economic policies have to be adopted. There are already a lot of good practises, which could be adopted, e.g. subsidies to renewable fuel and cars using renewable energy, subsidies for purchasing of electronic vehicles, free public transport etc. Besides social marketing could be employed, which would increase awareness of society of consequences of high energy intensities, which mean extensive energy use.

All those factors, affecting energy intensity has to become focus of discussion to be it scientific discussion, discussion at governmental or societal levels.

References


LEAP (the Long-range Energy Alternatives Planning system) https://www.energycommunity.org/default.asp?action=introduction


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REGIONAL RISKS AND CHALLENGES IN SMART GROWTH IN LATGALE REGION (LATVIA)

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Abstract. Rural areas are particularly important for ensuring sustainability and smart development of a state as a whole. The present study reflects the quantitative and qualitative assessment of smart growth challenges in the region of Latgale (Latvia) at the level of 19 districts. Worked out within the framework of the Latvian National Research Programme EKOSOC-LV, the present study focuses on smart growth as a tool for risk prevention and the use of opportunities in regional development within the framework of the concept of smart specialization. The research aim is to estimate the risk factors that influence the formation of a smart territory and to analyse the interrelationship of quantitative indicators and expert opinions. By analysing the theoretical principles, the regional actors’ recommendations, taking into account the research group participants’ and regional experts’ findings, the authors characterize the processes and the risks of smart development, as well as make assumptions about the development of the desired situation. The significant risk in the development of Latgale region is the decline in its population. At the same time, the results of the research show that the population is the most important cornerstone of smart growth of the rural territories in Latgale region. Both the objective data processing (statistical analysis) and the subjective point of view (the results of the expert survey) highlight a number of significant risk factors for promoting smart regional space and the growth of knowledge-based economy: the insufficient development of the population’s economic activity particularly in the knowledge-based segment, and the small population size. The assessment of various challenges and risks in the regional development of Latvia, as well as the integrated application of quantitative and qualitative approaches allows for the elaboration of a comprehensive vision of the smart growth processes in Latgale region of Latvia. The quantitative assessment is based on the establishment and testing of the integrated index (Smart Development Index). The qualitative assessment is based on the regional experts’ opinions summarized by using the Analytic Hierarchy Process methodology. The research results have both scientific and practical applicability in promoting smart development in rural areas. First of all, the results of the study offer a possible methodological solution for the assessment of smart development. Secondly, the obtained scientific experience can be used for solving practical problems at the level of the districts of Latgale region.

Keywords: Latgale region (Latvia), regional development, smart specialization, knowledge-based segment, Smart Development Index


JEL Classifications: R11, O18
1. Introduction and theoretical background

Improvements in regional prosperity within the framework of the new paradigm of regional development should be linked to strengthening the competitiveness of the territories through their potential, i.e. resources, social capital, technologies, effective governance, institutional capacity, and the correct emphases in development, which form a major challenge for each region (e.g., McCann, Rodriguez-Pose 2011; Vanthillo, Verhetsel 2012; Koumparou 2013; Naldi et al. 2015; Aleksejeva 2016; Komarova et al. 2018; Iorio et al. 2018; Tvaronavičienė et al.; Fomina et al. 2018). The Smart Development Index, which includes all the dimensions necessary for the development of a region (resources, population, economy and governance), allows for the identification of new trends in the development of Latgale region.

Thus, the potential solution to the introduction of smart specialization in small rural areas can be found using a place-based regional approach, which envisages realizing the potential of each territory (e.g., McCann, Rodriguez-Pose 2011). Basing on the scientific literature, the authors of the research emphasize the need to use the potential of any territory (e.g. Vanthillo, Verhetsel 2012) and the possibilities for ensuring smart development in distinctly rural areas (Naldi et al. 2015), which also enlarge the opportunities for small rural areas to engage in the process of smart specialization, reducing the risks of sustainable development of these territories. As concluded by Lindqvist et al. (2013) in the study “Implementing the Concept of Smart Specialisation in the Nordic Countries: an Exploratory Desk Study”, the policy of introducing and implementing smart specialization in Northern Europe depends on the type, the potential and the impact of the regions. However, Lindqvist et al. (2013) indicate, that there exist also common “success factors”, for example, the analysis of “critical mass” activity and interdisciplinary, cross-sectoral cooperation and partnership between regions at local, national and global levels, in developing and implementing innovation strategies and policies.

Since the paradigm of smart growth is new for Latvia and its regions, possibilities of small districts are limited not only due to their socio-economic capabilities, but also due to the lack of available examples, knowledge and experience in this area. However, this problem is topical not only for Latvia (Šipilova et al. 2017a). According to the OECD (2013) research “Innovation-Driven Growth in Regions: the Role of Smart Specialisation”, smart specialization is:

- the focus on the comparative advantages of scientific, technological and economic specialization;
- policy intelligence in order to identify the areas that already have or might develop comparative advantages in future;
- ensuring the orderliness of governance in order to bring together the potential of all involved parties in a specialization strategy (OECD 2013).

Examples of individual countries that, according to their regional development goals and start-up positions, are similar to Latvia (e.g., Lithuania, Romania) show an aspiration towards uniqueness and smartness in regional development (see, for instance, Gedminaite-Raudone 2014; Talmaciu 2012). The authors of the study apply several scientific methods for detecting the key risks and factors driving regional growth in small districts in Latgale in the framework of a place-based approach. The new paradigm of regional development policy envisages the use of the place-based or context-specific approach in the process of evaluating and promoting the development (Ostrovska et al. 2016). This approach emphasizes Europe’s rich territorial diversity, encouraging the use of this factor to promote the development of territories (ESPON 2013). The approach envisages that strengthening of the competitiveness of an area is based on identifying the context and the values of a particular place, community or region.

During the process of evaluating and promoting the development of territories it is necessary to focus on targeted and sustainable use of local territorial resources, approaches and technologies applied in the use of resources, specifics of governance, institutional capacity, know-how, territorial development potential, and other means and growth-enhancing conditions for promoting prosperity.
2. Regional Development in Latvia

2.1. Characteristics of Latgale region

The territory of Latgale region is 14,5 thousand km² (22.5% of the country’s total area); it is located in the eastern part of Latvia and within the country it borders with Zemgale and Vidzeme regions, but in the south – with the Republic of Lithuania (57 km long border). In its turn, 253.2 km is the EU’s external border, including 166.2 km in the east – with the Russian Federation and 87 km in the south-east – with Belarus. There are 21 districts in Latgale region, including two republican cities – Daugavpils and Rēzekne, as well as 19 districts. 10 out of 19 districts border with other countries, and the border of nine regions make part of the EU’s eastern border – six border with the Russian Federation, three – with Belarus (see Figure 1). This is an important challenge for territorial development, because the possibilities for cooperation between border regions are not promoted and are significantly affected by geopolitical initiatives (e.g., sanctions, restrictions on movement, etc.), the different nature of economic activities, the level of development, and other socio-economic peculiarities.

Agriculture, food industry, forestry, wood processing, tourism, metalworking, mechanical engineering, transport, communications and logistics can be considered traditional sectors of Latgale region. Relatively new and promising industries are also developing; thus, renewable energy and energy efficiency, largely based on the sectors of agriculture and forestry, as well as creative industries, health services and health promotion services are growing progressively.

2.2. Research Results and Discussion in Latgale Region

According to the modern paradigm of regional development, one of the most essential driving forces of development is man. However, the regions of Latvia face a major challenge – the decrease in the number of its inhabitants. According to the data of the Central Statistical Bureau, the number of Latgale inhabitants has continued to decrease in recent years and at the beginning of 2017 was 270.2 thousand or 13.9% of the total population of the country, but the population density was 18.6 inhabitants / km² (CSP 2017).

The distribution of Latgale districts according to the population shows that relatively highly-populated areas are capable of reaching the above average or high rate of development. In contrast, sparsely populated areas show a stagnation trend. (Jermolajeva et al. 2017). It has to be concluded that the largest number of districts (11 out of 19) belong to the group of sparsely populated districts, i.e., the population does not exceed 7682 people.
In addition, the majority of districts – 12 out of 19 – are predominantly rural areas (more than 50% are rural inhabitants) according to the proportion of rural population (more than 50% are rural people); moreover, in the outermost, as well as in predominantly rural areas, the more rapid trend of population aging is observed. This is to be considered a risk to the development of the region and therefore it is important to understand the peculiarities of the “stagnant” and “fast growing” rural areas and to identify the potential drivers of their growth.

Notwithstanding the relatively small size of population, a high level or a high rate of growth has been observed in several districts of Latgale region. This testifies to the fact that even with low population density, the measures promoting the development of the districts are being implemented, which allows a particular region to increase its growth rate. Several districts are “retreating territories”, i.e. they have exhausted the possibilities of increasing their growth rates. Therefore, it would be important for these districts to find new resources, means, and opportunities for smart growth so that to ensure future development and increase growth rate at a new level of development.

The average values of the Smart Development Index show that the level of smart growth in Latgale region is comparable to that of other regions. For example, Kurzeme region and Zemgale region demonstrate average values of Smart Development Index close to those of Latgale region (Šipilova et al. 2017b).

![Fig. 2. Smart Development Index in Latgale districts](Source: EKOSOC-LV data)

The maximum values of the Smart Development Index indicate that clearly unfavourable development in Latgale region is not observed (see Figure 2). The lowest index value (-10.008) in Latvia is encountered in Skrunda district of Kurzeme region, rather than in Latgale region. The peak index value of 7.386 reached in the district of Ilūkste in Latgale region is not far from the Kurzeme region’s maximum index value, which is 10.554 (e.g. Šipilova et al. 2017b). Moreover, it can be concluded that smart growth in Latgale region proceeds more evenly than in other regions, since the difference between the maximum and the minimum index values is smaller than in other regions. However, generally, the values of the Smart Development Index in the districts of Latgale region are relatively low.

The calculation of median values shows that in half of the districts of Latgale region, the Smart Development Index does not reach the value of 0.43, and this value is about 2.5 times lower than the index average of 1.074. The median value in Latgale region testifies to the fact that in most of the rural areas of the region, smart growth is significantly delayed in comparison with other regions of Latvia (e.g. Šipilova et al. 2017b).
In Latgale districts, the values of the Smart Development Index reflect the division of districts into two similar groups, where the first group is made up of ten districts with positive values of the index and the second group contains nine districts with negative index values (Jermolajeva et al. 2017). According to RDIM data (RDIM 2015), it is possible to calculate that in the group of districts with positive index values in 2014 there lived 62.31% of the inhabitants of the districts of Latgale region, which is a trend that is favourable for smart growth. However, in all 10 districts with positive values of the Smart Development Index, the growth rate observed is low or lower than average. Those districts where the growth rate is above average or high (Daugavpils, Vārkava, Cibla and Zilupe districts) belong to the group of districts with negative values of the Smart Development Index.

As a result, it can be concluded that smart growth of all the districts in Latgale region proceeds relatively smoothly, however, the districts with higher levels of smart growth develop more slowly than the regions with lower smart growth levels. However, in order to reduce the outflow of people from the regions to Riga and/or its surrounding districts (as well as to other countries), it would be necessary, alongside with Riga, to increase the other regions’ economic importance and attractiveness for doing business and choosing a place of residence (Jermolajeva et al. 2017).

In carrying out the qualitative evaluation of the region’s development, the experts were asked about the four dimensions of smart growth and their importance in the development of Latgale region. Four trends were identified: smart governance, smart resources, smart population, and smart economy. The experts evaluated how those factors reflected the formation and development of smart territory in determining the scenario for the growth of the region. When evaluating those trends, the concept based on inhabitants’ education, entrepreneurship, creativity, active involvement in the life of the local community (0.37) was emphasized as the most significant for Latgale region, which had a significant preponderance of points (see Figure 3).

The obtained results could indicate a vivid reaction to the decrease in the number of population in Latgale region at a time when, according to the new paradigm of regional development, the importance of human capital for the development has been emphasized. It is positive that Latgale is the only region in Latvia where the experts have emphasized the population-centred development scenario. Thus, maintaining the population and the successful use of their potential in the districts and the region is an important factor in ensuring sustainable development (Aleksejeva et al. 2018, Lavrinenko et al. 2017b).

![Fig. 3.](image-url)

a) Importance of the Smart Development Index dimensions from the expert point of view

b) The factors affecting the Population Dimension of the Latgale region’s smart specialization from the expert viewpoint

*Source: EKOSOC-LV data.*
According to the calculated correlation coefficients, the population dimension has a moderate correlation (and a higher correlation coefficient than the other dimensions $r = 0.615$). Describing the indicators of the region’s economic development, it is to be concluded that in Latgale region the growth of entrepreneurship in rural areas is positive, as both the number of new enterprises (+60.81%), the number of employees (+10.73%), as well as the net turnover (+51.02%) are increasing. A positive trend marks also the efficiency of the new entrepreneurship, as the net turnover growth is five times higher than the increase in the number of employees (Šipilova 2017).

The data analysis of entrepreneurship growth allows for emphasizing significant trends. When analysing the growth of entrepreneurship, the authors take into account not only the dynamics in the number of enterprises but also the characteristics of the districts of Latgale region according to the level of development and the growth rate, as well as the number of population.

In order to understand the smart growth trends in rural areas in Latgale region in detail, it is necessary to consider the segment of Knowledge-Based Economy (hereinafter KBE segment), which includes the sectors of high technology and medium-high technology manufacturing industries and knowledge-intensive services. When assessing the growth of the indicators of business activity in the KBE segment, it should be emphasized that predominantly they have been faster than entrepreneurship in general, particularly in the sectors of high technology and medium-high technology manufacturing industries.

In 2015, the number of knowledge-intensive enterprises in Latgale region totalled 878: 630 – in cities and 248 – in districts, and they employed 8058 employees: in cities – 5884, in the districts – 2174. Thus, the turnover per employee was on average 82.6 thousand EUR: in cities – 108.8 thousand EUR, in the districts – 11.8 thousand EUR. When analysing the situation in certain districts (see Fig. 4), it is obvious that in 2015, most of knowledge-intensive enterprises were situated in Līvāni district (35), Daugavpils district (32), and in Preiļi and Rēzekne districts – 30 in each.

In terms of the number of the employed in knowledge-intensive companies, Līvāni district was in the 1st place (395 people), too, followed by Balvi district (354), Preiļi district (282) and Krāslava district (277). A positive trend marks also the efficiency of the new entrepreneurship, as the net turnover growth is five times higher than the increase in the number of employees.

According to the data, the districts of Latgale region, taking into account the increase in the number of companies of the KBE segment, can be divided into five groups. The first group consists of the regions with negative
or zero growth observed (Rugāji, Viļāni, Baltinava, Zilupe); the second group includes the districts, whose growth is below the average indicator of Latgale region (Aglona, Balvi, Krāslava, Ludza, Liivāni, Ilūkste), the third group consists of the districts, the growth of which is very close to the average indicator of Latgale region (Daugavpils, Cibla, Dagda, Preiļi, Vārkava, Viļaka), the fourth group – the districts where the increase is above the average indicator for Latgale (Rēzekne), and the fifth group includes the regions with a marked increase (Kārsava, Riebiņi). As a result, the growth trend of the KBE segment can be considered outstanding only in three districts – Rēzekne, Kārsava, and Riebiņi. Taking into account also the districts’ growth rates, it is necessary to emphasize the marked differences between the districts and the modest growth of the KBE segment in the districts with above average or high growth rates compared to the districts with low or medium growth rates.

For example, in the regions with low growth rate and low development level, the growth of the KBE segment (+162.28%) almost three times exceeds the indicator of the overall growth of entrepreneurship (+68.42). However, in this group of districts there are also marked differences between the districts according to the growth rates of the KBE segment (e.g., Riebiņi district + 600.00%, Baltinava district + 0.00%, Viļāni district – 10.00%). The number of districts is considerably smaller in the group of districts with the growth rate above average or high growth rate. Among these districts, only Daugavpils and Cibla districts demonstrate a significant increase in the KBE segment (+ 94.44% and + 100.00% respectively). In other districts of this group, the growth of the KBE segment has not taken place or occurred to a lesser extent than the increase in entrepreneurship in Latvian economy as a whole.

The trends established allow for the conclusion that rural areas in Latgale region have the potential to develop knowledge-based economy (see Table 1). However, these trends have not yet sufficiently reflected the improvement of the development of the districts – the correlation between the growth of the KBE segment (by the number of enterprises) and the Smart Development Index in Latgale region practically does not exist (see Figure 5).

The data presented in Figure 5 show that there is no significant correlation between the growth of the KBE segment and the Smart Development Index. This is a rather logical outcome, notwithstanding the opinion of the experts surveyed by EKOSOC-LV about the high significance of the economic dimension for ensuring smart growth in rural areas in Latgale region, because the relation of this dimension to the Smart Development Index in Latgale region is weak in comparison with other regions.

In addition, this can be explained by the pronounced differences in districts according to the increase in the KBE segment. The second reason is the difference in the population density in the districts, since 11 of the 19
districts of Latgale region have a small number of population (1112-7686 inhabitants), which affects also the economic performance, because the amount of human resources is limited. Moreover, these 11 districts also have low growth rates (Aleksejeva et al. 2018). The general tendency of business growth shows that the population of Latgale region’s rural areas is relatively active in entrepreneurship, and in the KBE segment, despite this, Latgale region still has a high proportion of districts with small numbers of population and low growth rates.

As demonstrated by the quantitative and qualitative analysis carried out in the framework of EKOSOC-LV, there are manifestations of smart growth obvious in Latgale region (e.g., Šipilova et al. 2017b; Aleksejeva et al. 2018; Jermolajeva et al. 2017). Among them, in the context of smart growth, and taking into account the opinion of the surveyed experts about the great importance of the population and the economy in the smartness of the region, it would be necessary to emphasize the trends in business growth in the segment of knowledge-based economy, as well as possible risks that could reduce the positive effect on the total smart growth in the region.

Table 1. SWOT analysis of regional risks in smart growth in small districts in the context of population-based scenario – the case of Latgale region

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BUSINESS ACTIVITY IN SEGMENT OF KNOWLEDGE-BASED ECONOMY</strong></td>
<td></td>
</tr>
</tbody>
</table>
| a) business growth in the segment of knowledge-based economy proceeds faster than in other segments of economy | a) the districts are not well-aware of scientific and practical experience in smart growth in small districts  
| b) the proportion of knowledge-intensive segment gradually increases in the structure of the economic activity of the region | b) local inhabitants leaving for the existing development centres outside Latgale region  
| c) there is an increase in the knowledge-intensive segment observed in the districts with low level of development and small size of population | c) the concentration of the largest part of the region’s population in the districts with low growth rate  
| d) experts consider people of the region being the basis for smart growth | e) low growth rates in the districts with a relatively high level of development  
| **EXISTING GROWTH TRENDS, WEAK REFLECTION OF “SMART ACTIVITIES” IN GROWTH, INSUFFICIENT EXPERIENCE IN THE APPLICATION OF THE SMARTNESS CONCEPT** | f) weak correlation between the dimension Economy and the Smart Development Index  
|  | g) weak correlation between the growth in the knowledge-intensive economy segment and the Smart Development Index  
| **OPPORTUNITIES** | **THREATS** |
| a) less developed regions show a trend towards development | a) the lack of methodological solutions for the evaluation of smart growth that are applicable and widely used for small areas  
| b) according to the experts, the greater impact on smart growth in the region can be produced by the dimensions Population and Economics | b) the amounts of the collections of statistical data, their periodicity  
| c) greater involvement of citizens in entrepreneurship | c) difficulties in correct identification of the potential of a territory and its potential for development  
| d) more effective use of resources for the production of higher added value | d) in scientific literature small areas are discussed insufficiently  
| e) engagement in life-long learning, non-formal education | e) the confusion of districts as to how to introduce smart growth due to the lack of strong impulses  
| f) active use of the EU funds for the realization of the districts’ potential | f) weak development trend in the region in general  
|  | g) opportunities to involve all the interested parties  
| **ACTIVE INVOLVEMENT OF THE POPULATION IN VARIOUS GROWTH PROCESSES WITHIN THE FRAMEWORK OF THE SMARTNESS CONCEPT IN ALL DISTRICTS OF THE REGION** | h) resources are mostly used to produce low added value  
| i) the decrease in the number of population at a time when, according to experts, the Population is recognized as the dominant source of smart growth in the region | i) the decrease in the number of population at a time when, according to experts, the Population is recognized as the dominant source of smart growth in the region |
|  | **THE POPULATIONS’ IGNORANCE / UNAWARENESS OF THE REGIONS’ POTENTIAL AND LEAVING FOR OTHER CENTRES OF DEVELOPMENT** |

*Source:* developed by the authors on the basis of EKOSOC-LV data; Jermolajeva et al. 2017; Latgales plānošanas regions 2010a, 2010b; Šipilova et al. 2017a; 2017b.
According to Olaniyi and Reidolf (2015), regional growth is linked to business potential, including in the segment of knowledge-based economy. However, rural areas are usually considered to be less suitable for knowledge-based business, which, according to Olaniyi and Reidolf (2015), is not justified; and the scholars refer to the positive experience of Estonia. Positive examples of the growth of the segment of knowledge-based economy are emphasized also in Latvia (e.g., Rivza et al. 2016;Jermolajeva et al. 2017; Lavrinenko et al. 2017a; Šipilova 2017).

According to the calculations done, the growth of entrepreneurship in the segment of knowledge-based economy in Latgale region has been faster than in the economy in general (e.g. Jermolajeva et al. 2017; Šipilova 2017) as to the number of companies, the number of employees and the net turnover. This undeniably is attributable to the strengths of the region. However, taking into account the peculiarities of this trend in the districts of Latgale region, it is possible to identify both existing and potential risks for the region’s smart growth.

At the level of districts in Latgale region, there is a pronounced difference in the growth of business in the segment of knowledge-based economy, and in certain cases there even is the decrease in that growth (e.g., Jermolajeva et al. 2017). The existence of these differences between the districts does not contribute to the smart growth of Latgale region, because the economic capacity of each individual region is limited by the relatively small size of population and the differences in the efficiency of economic activity.

In assessing the ratio between the growth of the employed and the growth of the net turnover in the segment of knowledge-based economy at the level of districts, a common positive trend should be noted. However, in the districts with the indicators of a more rapid growth of entrepreneurship, the number of people employed in the knowledge-based economy has grown faster than the net turnover, which emphasizes the need to increase the efficiency of economic activity.

The region’s population and their ability and willingness to become entrepreneurs, according to the experts surveyed by EKOSOC-LV, form the basis for the smartness of Latgale region (e.g., Jermolajeva et al. 2017; Šipilova et al. 2017b). According to the above-mentioned business growth tendencies in the segment of knowledge-based economy, the foundations for the smart growth of Latgale region are provided. However, it is necessary not only to observe the desired trends, but also to see their reflection in the region’s smart growth. By analysing the relationship between the growth of the segment of knowledge-based economy and the region’s smart growth, it has been clarified that the correlation is weak (e.g., Šipilova 2017), which undoubtedly forms another risk of smart growth of Latgale region. The reason might be the low capacity of new companies. When assessing the data of business growth concerning the number of enterprises and the number of employees in the segment of knowledge-based economy, it can be assumed that in the rural areas of Latgale region those are micro / small enterprises that are established (especially in the sector of knowledge-intensive services), which is an initiative that should be supported especially in rural areas, but their overall contribution to the region’s economy is relatively modest. For instance, in the reviewed period (2009-2015), the share of the segment of knowledge-based economy in the region’s economy grew by only about 1%, which is ten times lower than in the traditional sectors (agriculture, forestry, fisheries). Despite the positive trend in the growth of the proportion of the segment of knowledge-based economy, since the other sectors (both manufacturing and services) demonstrate a decrease in their proportion, the small trend towards the increase in the proportion of the segment of knowledge-based economy creates a risk of smart growth for the region.

The importance of agriculture, forestry and fisheries continues to significantly increase in the economic activity of Latgale region (e.g., Jermolajeva et al. 2017), which, on the one hand, is positive for the maintenance and development of the traditional economic activity of the region, as well as for the employment of human resources, but on the other hand, according to the authors, it can also be considered a risk for smart growth, since at the moment only a small contribution is made to the smart development of rural areas (for example, through increasing the efficiency of agricultural activities, the development of organic farms) and it would be necessary to continue to actively implement smart solutions in these sectors.
Positive development of the segment of knowledge-based economy creates favourable grounds and promotes positive trends for promoting smart growth in Latgale region, however, the existing stereotypes about the limited ability of rural areas to be smart in their development poses a risk to the use of existing potential.

For example, the review of scientific and professional literature shows that smartness in processes of development and growth is associated with the creation of new knowledge and technologies, which is unlikely to take place in rural areas (for the literature review see Šipilova et al. 2017a), taking into account their distance from development and knowledge centres and limited human resources (e.g., Steiner, Mossbock 2014); however, studies also show that the existence of educational institutions in rural areas can produce a positive effect on their economic activity (e.g., Šipilova et al. 2016). In general, rural areas have the potential to realize growth and development potential by applying the place-based approach, which emphasizes the importance of the uniqueness of each territory (e.g., McCann, Rodriguez-Pose 2011).

Taking into account the research results, it can be assumed that the main risk for the promotion of smart growth in Latgale region is attributable to the ability to balance the findings arrived at in the result of the quantitative and qualitative assessment that the inhabitants of the region make the basis for smart growth of the region, at a time when the existing tendencies show the low population density of the rural areas and the population’s leaving for other development centres. In this context, the potential risk associated with the development of an appropriate growth strategy can also be emphasized, because, as noted by Foray (2014), it is essential to recognize the potential market and governance risks that impede smart specialization. Reducing the negative effects of identified risks on smart growth should be based on the concept of combination of “smart specialization” and the “place-based approach” for successful development of rural areas (for example, Naldi et al. 2015) proposed in the scientific literature.

The existing stereotypes about the ability of rural areas to be smart in their growth and development are rooted in the concept of smartness based on the creation of new knowledge and technologies. These processes are closely related to great financial investments and research activities that are limited in rural areas. Consequently, the experience in the application of the concept of smartness is little developed and the requirements for smart processes in the growth of rural areas are not well understood.

The decrease in the population in Latgale region is an unfavourable trend, because the results of both quantitative and qualitative assessment emphasize the inhabitants of the region as the basis for smart growth and development. Thus, the greatest challenge is to raise awareness among the people of the region about the benefits of smart growth and the potential of the region to promote it. For instance, according to the experts surveyed in the framework of EKOSOC-LV, the strong influence on smart specialization in the region is determined exactly by the population’s readiness and ability to become entrepreneurs. The established trends in the segment of knowledge-based economy show that Latgale region has a great potential and it is being applied in the creation of new companies in sectors that promote the smartness of growth.

However, the relatively rapid growth of the segment of knowledge-based economy, which is necessary for the smart growth of Latgale region, is still hindered by inadequate efficacy and pronounced differences at the level of districts, as well as the weak link between this segment and the region’s smart growth, as well as the slow increase in the proportion of the segment in the structure of economic activity.

Conclusions

The most significant issue in regional development that is characteristic to the whole territory of Latvia is the significant differences in the level of socioeconomic development both between regions at the national level and between the districts not only within the country, but also within a specific region. In Latgale region there is a pronounced regional inequality, and the Smart Development Index in Latgale districts reflects their division into two similar groups, where the first group contains ten districts with positive index values and the second group includes nine districts with negative index values. As a result, it can be concluded that in Latgale region
there is a relatively smooth smart growth between the districts of the region, however, the districts with higher levels of smart growth develop more slowly than the regions with lower levels of smart growth.

At the same time, the experts have acknowledged that citizens’ initiatives and activities play an important role in ensuring the region’s smart specialization, as attracting and retaining inhabitants and successful exploitation of their potential in the districts and the region as a whole are important factors in ensuring sustainable development.

Despite the issue of depopulation, the increase in entrepreneurial activity is evident exactly owing to the population’s activity, smart governance and knowledge-based business potential.

As a result of the analysis, the risks for smart growth of Latgale region can be attributed to:
- available scientific and practical experience on the application of the concept of smartness in rural areas,
- changes in the number of population in the region;
- the development trends in the segment of knowledge-based economy.

Notwithstanding the relatively rapid development of high and medium-high technology sectors, as well as knowledge-intensive service sectors in the rural areas of Latgale region, the economic restructuring in the region continues to be beneficial to traditional industries. In Latgale region, it is necessary to strengthen the links between economy and smart growth, to ensure efficient production with high added value. Increasing productivity in the context of smart growth would be particularly necessary in the sectors of high and medium-technologies and in the sectors of knowledge-intensive services.

The quantitative and qualitative indicators make it possible to assess the process of sustainable development in the economically less developed region of Latvia, namely, Latgale. The biggest challenge is related to the loss of social capital and the slow trends of business development. Given that 84% of the districts have small size of population and a low growth rate, ensuring sustainable development is both a necessity and a challenge.

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LEADERSHIP AS AN IDENTITY CREATION IN THE NEW LEADERSHIP PARADIGM

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Abstract. New ways of communication open up new possibilities to understand groups, organizations and leaders. Leaders lead groups and organizations thus groups and organizations are reflections of their identity. The way people communicate in a group or organization reflects of how the members see themselves in the organization. Identity of each member is expressed by his or her self-perception, self-image, self-reputation, self-competences thus is not only recognized by others, but each member recognizes the others’ too. As the dynamic context of reality leads to one or another type of interrelations as well as it inevitably impacts leadership practices at organization therefore research of reciprocity between leaders and other members at organizations is very important and timely. It is significant to research how people communicate to develop and maintain certain reciprocity and exactly how much, observing their interaction, could be possible to describe the environment and the people themselves. The research findings indicate that new paradigm leadership should be perceived as dynamic process resulting from interaction of people within organization and is clearly dependent on the context, and even more – on each participant identity expressed by self-competencies and on people’s relations.

Keywords: identity, self-perception, self-competencies, new leadership, in-depth interview

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JEL Classifications: M50, M51, O15

1. Introduction

In recent years, numerous of studies show that leadership development is seen as increasingly important strategic imperative of an organisation, moreover, in order to survive and succeed in the present day’s turbulent and highly competitive environment organisations need to develop leadership at all levels of the organisational structure. The success, survival and longevity of the organisations depend on selection of future leaders and their development; hence it is obvious that the development of the leaders capable of overcoming major difficulties is a considerable challenge for organisations of all sizes. Despite different approaches to leadership, its importance in today’s world sustainability is not limited to an attempt to interpret it by integrating it into organisational management; scientific discussions lead to an even broader expression of new leadership. New ways of communication open up new possibilities to understand groups, organizations and leaders. Stacey (2003) and Covey (2004) suggest that leaders lead groups and organizations thus groups and organizations are reflections of their identity. According to Shaw (2002) the way people communicate in a group or organization reflects of how the members see themselves in the organization.

The philosopher Hegel (1807), sociologist Elias (1991) and neurobiologist Cozolino (2006) believe it is important to point out that identity is relational, i.e. resulting from one or another relationship. People in organiza-
tions communicate trying to combine practical activities with their external environment as well as striving to self-expression, self-realization. According to Shaw (2002) thanks to these efforts people create relationships therefore it is more significant to investigate the nature of relationship arising from such situations rather than to deepen into general leadership ideas that may (or may not) emerge from such a relationship.

Problem. As the dynamic context of reality leads to one or another type of interrelations as well as it inevitably impacts leadership practices at organization therefore research of reciprocity between leaders and managers and people, i.e. colleagues, coworkers, subordinates, members of a team and other employees at organization, is very important and timely. It is significant to research how people communicate with each other to develop and maintain certain reciprocity and exactly how much, observing their interaction, could be possible to describe the environment and the people themselves. Managers’ influence communications of other people at organizations thus create new forms of interaction and relationships; and the creation of new forms of interaction and relationships means an identity development too. Binney et al. (2005) offer to move away from a variety of theories as to analyze communication, relationships and reciprocity of people within the organization is more urgent and critical. Authors claim that, in this context, this is a way to find out how the leadership within organization can help and what for the phenomenon is needful.

Purpose of this article is to analyze both theoretical and research-based aspects of diversity and variety of identities within organizations as well as to present that particularity of each participant identity is expressed by his or her self-perception, self-image, self-reputation as well as self-competences thus is not only recognized by others, but each participant recognizes the others’ too.

Object – leadership as an identity expressed by each participant’s self-competencies notable in communication, relationships and reciprocity of people within organization.

In order to research communication, relationships and reciprocity of people within organization qualitative research method – in-depth interview – was employed. The research aims to prove that New leadership should not be perceived as something that can be acquired individually or learned but is more like dynamic process resulting from interaction and reciprocity of people within organization and is clearly dependent on the context, and even more – on each participant’s identity expressed by self-competences and on people’s relations.

1. “The Self” concept as a key aspect in an identity creation in the New leadership paradigm

In the New leadership paradigm a leader is seen as a person (an individual), however, it is more important that leadership as a social phenomenon manifests itself only as interaction of members of an organization and does not make sense without them. The way people communicate in either group or organization reflects of how the members see themselves in the organization thus research of the ways of communication open up new possibilities to understand groups, organizations and leaders.

In order to succeed in dynamic environment organizations are tend to place greater responsibility on leaders to develop themselves. Many authors argue that in order to take leadership the essential task for the leaders of all levels of organizational structure is to cultivate a deep understanding of themselves (Karp, 2012). Leadership is perceived not as a set of behavioral rules or distinctive character or personal traits of a leader but as a process of influencing members of organization for achieving common tasks and objectives. Therefore a leader has to take leadership and by acting this way create mutuality, reciprocity and support between members of the organization thus constantly encourage trust and followership. Management staff influences communication of other people at organizations thus they create new forms of interaction and relationships as well as have an impact on sustainable identity formation.

Cambridge dictionary provides with several definitions of an identity:\footnote{https://dictionary.cambridge.org/dictionary/english/identity}

- Identity is who you are, the way you think about yourself, the way you are viewed by the world and the characteristics that define you.
• Identity is who a person is, or the qualities, or competencies of a person or group that make them different from others.
• Identity means a condition or a fact of being a specific person or thing; individuality of characteristics and qualities of a person, considered collectively and regarded as essential to that person’s self-awareness.
• Identity means a condition or a fact of being the same or exactly alike; sameness; oneness, i.e. groups united by similarity of interests.2

Speaking about capability of the New leadership, researchers prefer leadership identity, but not skills and features, as leadership identity is much broader phenomenon. Following this approach, and identifying leadership “substitute”, the researchers are not about to denigrate importance of classical leadership theories. On the contrary, it is believed that formation of leadership identity is a result of hard work, in which relations with others, self-awareness and self-development processes take place. Discussions about leadership skills, traits, and styles indicate that there may be a certain constant combination of these subjects, and this may be a person who is assigned to perform a particular task or to perform certain duties. Emphasizing this, scientists today blunt the conclusions of several decades’ scientists that leaders are not born, but at the same time argue that leadership is by no means a mass phenomenon, not everyone can be a leader.

Identity is a multidimensional construct used in variety spheres of social sciences to describe an individual’s comprehension of him or herself as a distinct, peculiar entity (Karp, Helgø 2009). Identity in psychology is often associated with the image (i.e., the thought-based model of oneself), self-esteem, personality, and individuality. Previous researches have presented different theories of individual’s identity (for example, Lecky, 1945; Mead, 1934; Wylie, 1979; Rogers, 1961; Cooley, 1902; Colby, 1968). However, the psychologist and psychoanalyst, who created one widely recognized theory Erik Erikson (1959), suggests defining the identity as a separate concept, i.e. without reference to the person’s peculiarity, exclusiveness, etc., which helps to separate one person from another. Development of an identity can be overlooked in several phases in which the identity is shaped as a response to challenges and human interactions. An individual can express his or her personality in behavior or conversation (discourse) to another person. Therefore, another person’s intentions may be indirectly implied by certain signs that the person sent. Personal characteristics determine personal identity, i.e. the individual’s personal, subjective self-assessment as an individual subject and his or her image. This subjective understanding of self can contrast with other aspects of the personality, for example, contrast can occur between “true me” and “visible to others” or “ideal me” and “what I need to be” (Higgins, 1987).

Marcia (1966) focused on the main aspects of identity development - choice and commitment - in the 1960s. The essence of this statement is that each person’s identity perception is largely determined by his or her own choices and commitments that it incurs due to certain personal and social features. 21st century researchers also claim that many of these choices are affected by values. Some researchers argue that values create choices, and choices create values. Different situations inspire manifestations of different aspects of personality, and self-awareness, identity may change due to various external stimuli and environmental challenges (Kark, van Dijk, 2007). Social psychology focusses on interpretation of individual performance through self-imposed mental phenomena and explains, examines how “true self” is linked with social environment. Some social psychology theories investigate the problem of identity, both at individual cognitive and collective levels of behavior (for example, Day et al, 2008). Social psychology theories state that there are certain identity-forming strategies that can be undertaken by a person who wishes to adapt to the social world (the society). Higgins (1987) argues that humans have two basic self-control systems. One of them is a pursuit of future benefits, and the other - an avoidance of punishment, therefore goal-seeking objectives reflect the “Ideal Self,” and the objectives of prevention are regulated in order a person behaves as others demand.

Looking from the perspective of leadership theory, Burns (2003) and Bass and Avolio (1994) focus their researches on relations between leaders and followers (e.g. from the very recent studies Naushad, M. 2018) As a result, researchers are increasingly analyzing psychological consensus of leaders and other members at an organization,

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2 https://dictionary.cambridge.org/dictionary/english/identity
emotional compliance, and recent researches point to the importance of dynamics of relationship between leaders and other members at the organization. Some authors (for example, Dearlove, Coomber 2005) argue that self-awareness is the basis of personality development. Others, for example, Scharmer (2007), argue that many theories of social science in the 20th century have focused on objective social facts, structures, systems and processes in which such social constructs are formed between participants in the social system, and therefore such theories in social sciences did not succeed in this regard. According to Scharmer (2007), internal stimuli stimulate and involve the individual into interaction with other people. The activity comes from linking itself to a certain place and role in the social system, social processes. As a person constantly communicates with others, the development of a person is strongly related to interaction of people. Carl Gustav Jung (1969/1978), the pioneer of analytical psychology, states that people have an inherent need for self-realization, which is why this process is called individualization or becoming an individual. By communicating people try to create their own unique identity, Jung suggests that a goal of each person’s self-realization should be considered as a desire to get closer to the highest possible constitution of his or her own identity. In this case, human identity is understood as a movement in space and time, which in mind manifests itself as a perception of human interactions and is influenced by a set of images created in the past, also present and future images. Jung’s human images of the past have been described as “Grounded Self”, the present images have been identified as “True Self”, and future images – as “Possible Self”. Other similar descriptions are suggested by Higgins (1987), i.e. “Actual Self”, “Ideal Self”, “Ought Self”.

3. Aspects of an identity as a certain leadership role in the New leadership context

The particular characteristics of “The Self” determine its identity – the individual’s personal, also subjective comprehension of him or herself, i.e. his or her self-perception, self-image, self-reputation, self-competences and its’ expression (Karp, Helgø 2009). Moreover, this subjective comprehension of “The Self” may contrast the other domains of “The Self”; namely between “own” versus “others” images of self-state representations, or the distinction between the “Ideal Self” and the “Ought Self” (Higgins, 1987). This raises a question: if leadership is dependent on identity, how should be leadership based on an identity?

Disclosure of an identity and emphasis on leadership requires personal development (Day et al. 2008). Leader’s life stories form a context of his or her experience, i.e. not only facts of people’s lives are important, but also personal life stories. The past and present and future stories and images play an important role and inspire internal reflection. People, in order to give meaning and to discover their own path, recreate many times and experience events and personal interactions that are important in their lives. Day (2001), McAdams and Pals (2006) believe that such processes are also applied to leadership development in organizations. Based on Jung’s concept, the authors suggest that leadership identity should be evaluated in the light of images of the past (“Grounded Self”), of the present (“True Self”) and of the future (“Possible Self”). According to this statement, researchers do not rely on linear time understanding; on the contrary, it is guided by cyclical concept of time, moreover - that the past is not a gift. The past is what, in the view of people current expectations for the future, is repeated in present. According to Stacey (2003), current expectations of the future have an impact on perception of the past, and the way people perceive the past now influences future expectations. Thus, based on personality psychology, the present (“True Self”) is characterized by a cyclical structure of time that includes the past (“Grounded Self”) and the future (“Possible Self”). James Kouzes and Barry Posner conclude that the mastery of the art of leadership comes with the mastery of “The Self”. Researchers believe that understanding of leadership identity is defined by choices and commitments that it carries in various difficult situations, exposed to different personal and social characteristics.

Lately, scientific research on leadership and authenticity has been increasing (for example, Goffee, Jones, 2005; Dearlove, Coomber, 2005; George, Sims 2007; Pearce and Conger, 2003). Dearlove and Coomber (2005) argue that leaders, who, for various reasons, miss the necessary stages of self-awareness, can later demonstrate identities that do not meet their values or convictions. According to the authors, such leaders may be harmful to organizations if the organizations tolerate obvious leadership weaknesses in long-term. Researchers argue that leadership growth and progress without self-awareness are not possible (Hautala, 2006). Jung and Avolio (1999) define self-awareness as a continuous process of individualization. Many authors argue that self-awareness, self-competencies’ expression and self-development yield better self-control, self-esteem and self-
confidence – significant factors for a leader who desires to take leadership. Kouzes, Posner (2002) believe that leadership development is a process of self-development too. However, some researchers make a theoretical distinction between leader development and leadership development (Karp 2012, Day 2001). In theory of leadership development a higher focus is placed on interpersonal capabilities, i.e. social awareness and social skills, while in theory of leader development higher attention is on intrapersonal capabilities, i.e. self-awareness, self-regulation, self-motivation and self-competencies’ expression. It should be pointed out, however, in practice such capabilities need to go hand-in-hand because a leader needs to take leadership and therefore to develop himself or herself and his or her ability to interact with other people and the environment too.

Not all authors agree with the above views on effective leadership and argue that there is pre-thinking (intentionality) in leadership activity. Some authors (e.g., Badaracco, 2006) believe that for some leaders their own dreams are source of intentionality. Others argue that a leader has very important intentionality that manifests itself as a vision (Senge, 1995) or a certain strategic ambition (Alexander, 2005). The third argue that intentionality emanates from persuasive future images and expectations that manifest themselves in the form of visions, strategies, directions, etc., and this is part of leadership. Carl Gustav Jung defined this area of human identity as future images or “Possible Self”. The fourth conclude that future images that appear in intentions, expectations, dreams, visions, ambitions, or other forms are rooted in human nature and in everyday life (for example, Badaracco, 2006). The fifth authors in the concept of creation of new leadership identity argue that leadership is defined by future image and expectations of a leader. The authors call it as “The Leadership Possible Self” and suggest leaders to consider the following issues: What are their intentions, expectations, dreams, visions, ambitions, strategies and, more pragmatically speaking, how they perceive and describe the future? What is their most worrying concern about their role in society and what they can offer in a new, different way? Despite the diversity of leadership definitions, most people present intentions describe as the images they would like to achieve in the future, which is why they believe that it defines quality of the New paradigm leadership. Most leaders, in developing their own leadership identity, find motivation in the future expectations. Finding and expressing ownself in leadership creates a risk because one person’s selfish “Self” is more acceptable than others’. It is also important that disclosure of individual and unique leadership styles always requires constant development of each and every leader own “Self”. Reflection on identity and attempt to reconcile this with leadership is a continuous process that lasts entire career of each leader.

Over the years different theories of “The Self” have been identified in both self-psychology and self-management. To find one’s authentic, ideal or true “Self” is truly a nice ideal, but its realization and implementation in practice is rather difficult. More important is to find, or define, a self-determined by oneself (Karp, 2012). Authors therefore argue that “The Self” is not a stable inner core but a stream of actions, and that the comprehension of self-change is due to various situations and both external and internal stimuli as well as interaction and reciprocity of people within organization.

4. Research method, ethical consideration and limitations

In this study, the researchers aim at constructing the reality of leaders and managers and people, i.e. colleagues, coworkers, subordinates, members of a team and other employees at organizations under study. They attempt to understand the reality that the members at organizations experience concerning communications, relations, interaction and reciprocity in their everyday life, based on interpretations (Sarantakos, 2013). In-depth interviewing is a qualitative research technique that involves conducting intensive interviews with a small number of respondents individually to explore their perspectives on a particular idea, program, or situation. In-depth interview instrument gives quite correct and accurate feedback of individual strengths and specific competencies.

In order to measure particularity of identity of each participant that is recognized by others as well as to present of how each participant recognizes the others’ a measurement tool in the form of a questionnaire has been designed. The research adopts a positivist and qualitative approach employing previously developed instruments to assess participants’ opinions, attitudes, and beliefs concerning preferred competencies, communication and relationship
behaviors as well as reciprocity of people within organization. Survey assessing both „Self“ and „Others“ attitudes were administered based on pre-existing scales that have been modified for the study. Interview questionnaire was based on Competency assessment tool, namely, MCP™ (Managerial Competency Portfolio 360° Assessment) (Hay Group 2013) and Leadership practices inventory (LPI) (Kouzes, Posner, 2013). In order to reach the research purpose the two core competencies’ clusters – managing yourself and enable others to act - have been chosen. The questionnaire covers 21 question formed as contingency priority, i.e. 6 questions highlighting competence “managing yourself” and 15 questions highlighting competence “enable others to act” are included.

The two core competencies’ clusters and the five scales (self-control, self-confidence, empathy, foster collaboration, strengthened self-determination) conceptual model is based on Leadership practices inventory (LPI) framework (Kouzes, Posner 2013):

![Fig. 1. Two core competencies’ clusters and five competencies' scales conceptual model](image)

Source: Adopted according to Leadership practices inventory (Kouzes, Posner 2013).

The interview was performed at two business consultancy companies operating on the Lithuanian market. The consultancy companies are classified as medium business enterprises that employ 10-50 employees. 24 respondents, 9 females and 15 males, the average age 35.6 years ranging from 26 to 59 years old participated in the in-depth interviewing. 2 top managers, 14 senior project managers, 8 managers and specialists, all respondents university master degree education, having the average 6.2 years work experience in the consultancy sector were interviewed individually. The interview was doubled, i.e. questionnaire was discussed and filled in individually by a respondent about him/herself (About Self) and by the respondent about his colleagues’ (About Others).

Confidentiality and anonymity have been ensured through the data collection process and interpretation, also through both preparation and presentation of the research report. Majority of the respondents agreed and the researchers were allowed voice recording, except eight objected to it; therefore the respondents submitted their responses in writing on paper during the interview. The overall respondents’ answers were analyzed through an inductive approach of content analysis. Content analysis is defined as the technique of analyzing qualitative data that can be carried out on transcribed interviews (Basit, 2010). The six steps of data analysis suggested by Lodico, Spaulding and Voegtle (2010), namely preparing and organizing the data; reviewing and exploring the data; coding data into categories; constructing thick descriptions of people, places and activities; building themes; and reporting and interpreting data were used (Jinot 2018). Answers of each respondent under the study have been combined with other respondents’ responses, thus identified the highest-developed competencies and the competencies that still need to be considered, strengthened and unified.

The in-depth interview proceeds as a confidential and secure conversation between an interviewer and a respondent, however, important limitations should be pointed out. One of well-known is Halo error when a respondent under study is seen by others as good or bad, depending on his/her reputation rather than his/her true performance. It can also be encountered with the current impression (i.e. Recency effects) error, i.e. if the respondent has been successful only resent a few weeks, although he/she was not doing well all year round. The respondents were reluctant to participate in the interviews due to confidentiality and anonymity aspects. While performing in-depth interview was very important to inspire trust of all respondents: the assessments remain anonymous; the assessments remain confidential; the results will be used for positive purposes.
5. Data analysis and findings

The purpose of this paper is to present particularity of each participant’s identity expressed by his or her self-perception, self-image, self-reputation and self-competences, and to examine of how each participant is recognized by others as well as how each participant recognizes the others’. Five competencies’ scales (self-control, self-confidence, empathy, foster collaboration, strengthened self-determination) representing two core competencies’ clusters – managing yourself and enable others to act - were included to express particularity of the participants identities.

A significant gap between self-evaluations („About Self“) and evaluations of other people at the organization they work („About Others“) was revealed (Figure 2):

![Diagram](http://example.com/diagram.png)

**Fig. 2.** Results of self-control, self-confidence, empathy, foster collaboration, strengthened self-determination evaluations „About Self“ and evaluations „About Others“

*Source: compiled by the authors based on research results*
5.1. Foster collaboration

All 24 respondents believe that foster collaboration in both strategic issues and every day activities („About Self“), however, evaluating other members of the organizations 11 agreed and 13 denied („About Others“). Manager from company A – female, age 37 - explained the disinterest of his colleagues: „Majority of my colleagues consider themselves as top opinion leaders and do not see any need to find out others’ opinions“. Manager from company B – male, age 34 - did not hesitate to elaborate: „My colleagues never ask, never call for a piece of advice. They make mistakes suggesting discounts to clients, so this worsens annual results of our company“.

5.2. Strengthened self determination

16 respondents agreed, although 8 had doubts about “Self”. Manager from company A – male, age 53 - stated: “I am really attentive and actively listen to diverse of points of view of my colleagues, however, I cannot be proud I always give my colleagues a great deal of freedom and choice in deciding how to do their work“. On the other hand, only 7 agreed and 17 disagreed about „Others“ claiming that they are not given a great deal of freedom and choice in deciding how to do their work. Three managers from company B – female, age 42; female, age 51; male, age 32 - complained: „The authorization is not clear and I am confused sometimes about notes I hear from my colleagues: it makes me feel self-consciousness, sometimes - shame or awkwardness“.

5.3. Self-control

Majority of respondents (18 from 24) agreed, 6 neither agreed nor disagreed about “Self”, however, 7 agreed, 7 denied and 10 neither agreed nor disagreed about other members’ self-control (evaluation of „The Others“). Manager from company A – male, age 54: „Even a small disagreement brings about a conflict, which then grows into a long-lasting dispute. It is distressing; it prevents concentration on further work“. Manager from company B – male, age 37: „Only very few can respond calmly in stressful situations at our company“. Manager from company B – female, age 46: „I am not able to focus on work that day: I usually leave and work from home“. Manager from company B – female, age 28: „... there are two-three peacemakers in stressful situations at our organization, they calm others and are doing great to control own emotions“.

5.4. Self confidence

A significant gap was revealed in self-confidence evaluation: 17 agreed and 7 neither agreed nor disagreed about „Self”, however, 5 agreed; 3 denied; 16 neither agreed nor disagreed about „Others“. Majority of respondents (17 from 24) pointed out about “Self“ that they hold their opinion despite any disagreement, also state confidence in their own ability and judgment, however, emphasized that have difficulties to remain positive and optimistic in the face of opposition. Significantly, majority of respondents (19 from 24) claimed about „Others“ for resisting and ignoring necessity of changes, for being too much exited by new, challenging tasks or situations.

5.5. Empathy

7 had doubts (i.e. neither agreed nor disagreed), although majority of respondents - 17 from 24 – agreed about „Self“, pointing out that they easily pick up on unspoken messages as well as usually understand how people are feeling. However, evaluating others’ only 4 (from 24) agreed; although 9 denied and 11 neither agreed nor disagreed („About Others“). Six managers from company A – female, age 29; female, age 32; male, age 44; male, age 41; female, age 51; male, age 54 - stated: „... my colleagues hardly ever understand unspoken thoughts, concerns, or feelings. They fail to notice other peoples’ emotional reactions, so this is the main reason why conflicts begin“. Eight managers from company B – male, age 51; male, age 40; female, age 28; female, age 39; male, age 42; male, age 53; male, age 54; male, age 37 - emphasized that it is critically important to understand not just own thoughts and concerns, but to perceive others’ unspoken thoughts, concerns, doubts, both negative and positive emotions and feelings.
Conclusions and future research

This study was carried out and designed to identify and present particularity of evaluations towards “The Self” and “The Others” among employees at two business consultancy services’ companies. Almost all the respondents interviewed pointed out certainty and self-awareness, however, while evaluating other members – managers and coworkers - claimed about lack of particular competences. Some managers feel stressed and helpless, especially about the gap in different perceptions that they face communicating with colleagues at organizations they work. Concerns and doubts were emphasized evaluating their colleagues’ enablement to act and the way they demonstrate such competencies as self-control, self-confidence and empathy.

However, this study revealed that all respondents manifest a lack of mutuality and reciprocity as well as lack of leadership and authority expressed in relevant competences. The findings of this paper made it clear that “The Self” and “The Others” evaluations can essentially differ even in relatively small companies with up to 20 employees. The findings also revealed that differences of competences’ evaluations and perceptions originate from different attitudes “About Self” and “The Others”. However, since the study used a small sample of respondents, the research results cannot be generalized. It should be pointed out that the research results increase the authors’ insights into the root causes of the leadership identity phenomenon so far and they allow the managers of the organizations under study to acknowledge the problem as well as to focus on better understanding. It became evident from the research results that there is a misunderstanding of the leadership identity phenomenon of variety of people identities expressed by their core competences’.

When in-depth interviews are employed, generalizations about the research results are pretty often not able to be made because small samples of the respondents are chosen and random sampling methods are not used. On the other hand, in-depth interviews provide valuable, thus reliable information, specifically when combining other methods of respondents’ data collection. It should be noted that the general rule on sample size for interviews is that when the same opinions, beliefs, approaches and arguments are emerging from the interviewees, then a sufficient sample size has been reached. This paper has unveiled manifestations of core competences’ that affect everyday communications, relations as well as interaction and reciprocity of people within organizations. Therefore the in-depth interview, as the research tool, could be combined with other qualitative and complex research methods; and could be tested and improved, and the dimensional content could be filled with findings of further empirical research.

References


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TOWARDS REGIONAL SUSTAINABLE DEVELOPMENT VIA GOVERNMENT FINANCIAL TRANSPARENCY: EVIDENCE FROM INDONESIA

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Abstract: We examine factors that influence financial transparency in local government website in Indonesia which is motivated by the low level of financial transparency displayed in the local government’s official website. The purpose of this research is to obtain empirical evidence on the effect of entity characteristics represented by the size of local government & taxes per capita, political factors represented by political power & e-government, and environmental factors represented by internet visibility & income per capita, on financial transparency displayed in local government website. By using three dimensions of financial transparency constructed from the combination of NGO Transparency International and government regulation, we try to assess financial transparency displayed in local government website more comprehensively. The observation was conducted at the end of August 2017 until September 2017. Logistic regression analysis was applied to evaluate the model. Using 411 samples from 514 Indonesia local governments in 2015, our data show that the level of financial transparency in local government website is still very low. Furthermore, the findings show that size of the local government, internet visibility, and e-government are positively associated with local government’s financial transparency, but other variables including taxes per capita, political power, and income per capita have no effect on financial transparency.

Keywords: local government, financial transparency, entity characteristic, political factors, environmental factors.

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1. Introduction

Transparency becomes a vital aspect along with the rapid development of information communication technology, especially internet. Based on the data from Association of Indonesian Internet Service Providers (Asosiasi Penyelenggara Jasa Internet Indonesia-APJII) 2016, the penetration of internet user in Indonesia has reached half of total Indonesia population. This number placed Indonesia in third place for largest internet user in Asia in 2016 after China and India¹.

The high growth of internet user provides opportunity for the government to fix and improve service for the people through the use of technology and information, one of them by improving transparency through publication of information in government’s official website. Beside the publication of general information, the role of website is also important to provide financial information for stakeholders (Styles & Tennyson, 2007). The

¹ Source: http://www.internetworldstats.com/stats3.htm#asia
provision of financial information is important to achieve transparency and accessibility of information by taxpayers (Ríos et al., 2013), auditors (UU No. 15 tahun 2004), and the people (UU No. 14 Tahun 2008).

However, even though e-government regulation in Indonesia has been issued for almost 15 years and several other supporting regulations that require local government to manage an official website (Instruction of Ministry of Interior No. 188.52/1797/SJ of 2012) has been issued, there are some local governments that do not own website as transparency media. The data from the Centre of Data, Information, Communication, and Telecommunication of Ministry of Interior (Pusdatinkomtel Kemendagri) of 2017 shows that from 514 districts and municipalities in Indonesia, only 87% districts and municipalities that have website and routinely managed as transparency media. Besides, 13% of districts and municipalities have not own ideal website as media of transparency. The problem with website including 14 local governments with no official website, 50 local governments with not accessible website, and five with website but never update it since 2015.

From functional perspective, the majority of local government websites are not utilized as financial transparency media. Martani & Fitriasari (2014) find that financial transparency and performance index in local government website is very low, around 6%. This support Rose (2004) who finds that most of local government website do not provide detailed financial information such as local government budget. Besides, Hermana et al., (2012) also find that the disclosure of financial information in local government’s website is not as good as the completeness of features and services of local government. These considerations emphasize the importance of financial transparency shared through local government website to be studied.

There are factors that affect financial transparency in local government website. The result from existing research shows that entity characteristics such as local government size has positive effect on financial transparency in local government website (Garcia & Garcia-Garcia, 2010; Serrano-Cinca et al., 2009; Styles & Tennyson, 2007). Besides that, other entity characteristics such as local government incomes in the form of local government taxes and transfer, also positively affect financial transparency (Guillamon et al., 2011). In Indonesia context, Martani & Fitriasari (2014) also find that size and types of local government have positive effect on financial transparency and performance in local government website.

Furthermore, political factors may affect financial transparency. Tejedo & Araujo (2015) find that political power in local government has negative effect on financial transparency. This means that the higher the political power owned by local government, the lower is the level of financial transparency in the area. While political factor in the form of e-government has positive effect on financial transparency (Serrano-Cinca et al., 2009).

Another factor that affect financial transparency in local government website is environment. Serrano-Cinca et al. (2009) find that the level of popularity of website has positive effect on financial transparency. Another environmental factor is Gross Regional Domestic Revenue per capita also has positive effect on financial transparency (Martani & Fitriasari, 2014; Serrano-Cinca et al., 2009; Styles & Tennyson, 2007; Pasekova et al., 2016). This means that the higher the popularity of website and income per capita in a local government, the higher the level of financial transparency in the website owned by the local government.

This study refers to Serrano-Cinca et al. (2009) who employ the factors of entity characteristics, politic, and environment to test whether these factors affect financial transparency in local government website. This research is different from Serrano-Cinca et al. (2009) especially in the dependent variable using financial transparency as measurement. The new financial transparency indicators is the result of adjustment from the financial transparency indicator (international transparency) used by Guillamon et al. (2011) and Vicente et al., (2013) on the Instruction from the Ministry of Interior No. 188.52/1797/SJ of 2012 regarding The Improvement of Transparency in Local Government Funds Management. The use of new indicator aims to measure financial transparency more comprehensively because the indicator has 28 items compared to Serrano-Cinca et al. (2009) which only have 9 items. The use of new indicator also solve subjectivity in in-site financial transparency assessment in Serrano-Cinca et al. (2009) and Martani & Fitriasari (2014). Besides that, the use of this new indicator is

2 Source: http://www.kemendagri.go.id/pages/links/pemerintah-daerah-kabkota
expected to be more suitable in measuring financial transparency in local government website in Indonesia because it has adjusted with local regulation.

This study aims to test whether entity characteristic represented by size of local government and taxes per capita, politic represented by local government political power and e-government, and environment represented by internet visibility and income per capita; affect financial transparency in local government website. This study is expected to provide theoretical and practical benefits. Theoretically, this study is expected to increase knowledge for academicians and becomes reference for future studies on financial transparency in local government website. Practically, the result of this study can be used as input and evaluation in policy making, especially to improve financial transparency in local government website.

2. Literature Review and Hypothesis Development

a. Literature review

Agency theory is a theory that describe the relationship between a party that acts as agent who perform activities based on the interest of another party who acts as principal (Jensen & Meckling, 1976). In the agency relationship, it may leads to agency problem in the form of information asymmetry and conflict of interest. As an effort to solve agency problem, principal and agent will bear agency cost. According to Jensen & Meckling (1976), agency cost can be classified into three types: (1) monitoring cost, (2) bonding cost, and (3) residual loss.

In public sector, the agency relationship occurs when the government as agent acts on the interest of people who acts as principal. According to Halim & Abdullah (2010), government as executive is the agent for legislative and public (dual accountability) and legislative is the agent for public. Similar with private sector, agency problem also occurs in public sector. In legislative level, agency problem in the form of opportunistic behavior may occurs in two positions, legislative as principal and agent. As principal, legislative has potency to propose policy that does not directly related with public service or legislative function. As agent, legislative may propose the activities that do not defend voter’s interest or accommodate public needs (Halim & Abdullah, 2010). In government context, one way to minimize agency cost is by performing information disclosure regularly. This is in line with Araujo & Francisca (2016) who state that transparency might reduce information asymmetry problem, limit agency problem (Laswad et al., 2005), and make the process more open.

Signalling Theory is a theory that explain that government as a party that receive trust from people will try to show positive signal to their people (Martani & Fitriasari, 2014). This is cause by information asymmetry between the government external parties. Information asymmetry is a condition in which government has more information than external parties regarding the general condition and prospect of the government. One of the solutions to reduce information asymmetry is by providing positive signal to the external parties. For example, positive signal that can be given is publishing achievement or disclosing more detailed financial and non-financial information through various media including website. Positive signals can minimize dissatisfaction on local government prospect and increase external party’s trust to government performance.

In Indonesia local government context, there are two regulations that mentioned local government obligation to disclose financial transparency in website. The first regulation is Government Decree No. 56 of 2005 regarding Local Government Financial Information System and the second one is Instruction of Ministry of Interior No. 188.52/1797/SJ of 2012 regarding the Improvement of Transparency in Local Government Budget. These two regulations are in line with Presidential Instruction No. 3 of 2003 regarding National Policy and Strategy of e-Government Development that require all institutions to own website as media of publication and Law No. 14 of 2008 regarding The Openness of Public Information to get information periodically.

Previous research on financial transparency in local government website is started by Laswad et al. (2005) who study the factors that affect financial information disclosure in local government website in New Zealand. Their research uses local government size, local government assets, leverage, political competition, and types of local
government as independent variables. The result of their research is local government assets, leverage, press visibility, and types of local government affect the disclosure of financial information in local government website.

Serrano-Cinca et al. (2009) study the factors that affect voluntary internet financial reporting. The factors are grouped into three dimensions that are entity characteristics (size, issuing debt, financial feature), politic (internet visibility and e-government), and environment (income per capita, education level, and socio-political commitment). The result of their research shows that size of local government, political will, and income per capita affect the level of voluntary Internet financial reporting. Guillamon et al. (2011) study financial transparency in Spain using political and socio-economy factors as proxy. The result shows that population, tax, and transfer income have positive relationship with the level of financial transparency. Besides that, their study also conclude that left-wing party tend to be more transparent than right-wing party.

However, continuing the study conducted by Laswad et al. (2005), García & García-García (2010) study the factors that affect the disclosure of financial information in local government website in Spain. The factors they study are local government size, leverage, capital investment, political competition, and press visibility. This study does not only develop new measurement for dependent variables, but also re-testing the effect of several factors that have no significant relationship in the previous research. The result shows that the factors that affect voluntary disclosure are size of local government, capital investment, press visibility, and political competition.

From the studies described above, we can conclude that there is inconsistency in term of factors that affect financial transparency in local government website. Based on this conclusion, this study develops previous studies by adding new variable and re-testing the variables that have no significant relationship or have contradicting results. The development of hypothesis with financial transparency in local government website as dependent variable and local government size, taxes per capita, political power, e-government, internet visibility, and income per capita as independent variables are as follow.

b. Hypothesis development

Laswad et al. (2005) explain that local government size as the quantity of resources owned by local government, while Serrano-Cinca et al. (2009) put it as a variable that describe an entity. The quantity of resources owned by local governments is the performance result which local government wants to show to public. Thus, local government will perform higher financial transparency in local government with larger size (Styles & Tennyson, 2007). Besides that, local government that has large size usually has problems on resource management especially regarding program and public service activities that make local government to receive strong pressure from the people to publish information as a form of need to oversee government’s performance. García and García-García (2010), Serrano-Cinca et al. (2009), and Styles & Tennyson (2007) find that local government size has positive effect on financial transparency. Besides that, study in Indonesia conducted by Martani & Fitriasari (2014) also find positive relationship between local government size and financial transparency and performance in local government website. Thus, the first hypothesis is:

Hypothesis 1: Local government size has positive effect on financial transparency in local government website.

Public sector is funded by taxpayers which is why they need information transparency to oversee every activities performed by government (Ríos et al., 2013). In local government context, tax per capita describe tax revenue and local government retribution from the populace. Each tax and retribution collected by local government and used to fund the governance is accountable to the public as a form of transparency. Thus, local government that manages large taxes will perform higher transparency (Guillamón et al., 2011). This is in line with principle-agent model developed by Ferejohn (1999), which indicates that the quantity of taxes managed is related with the high level of transparency. Guillamón et al. (2011) show that tax per capita has positive relationship with financial transparency in local government website. Therefore, our second hypothesis is:
Hypothesis 2: Tax per capita has positive effect on financial transparency in local government website.

Local government political power is one of variables in political factors that represent political effect from legislative side. According to Tejedo & Araujo (2015), local government with strong political power will tend the make policy easier because the pressure from opposition is low. The easiness in policy-making makes the local government tends to be shut and cover up policies that do not represent principal’s interest (Marques & Pinto, 2018). Because of that, local government with strong political power will have low financial transparency in their website. Tejedo & Araujo (2015) show that political power has negative effect on transparency. Thus, our third hypothesis is:

Hypothesis 3: Political power has negative effect on financial transparency in local government website.

E-government is one of variables in political factor that represent the political effect from executive side. E-government is an effort to perform electronic based governance, in order to improve the quality of public service effectively and efficiently, transparently, and accountable (Inpres No. 3 of 2003). The implementation of e-government directly will encourage local government to utilize technology and information as transparency media (Kanapinskas et al., 2014). Therefore, local government that implements e-government will have better level of financial transparency. This is in line with the function of e-government to increase government openness and transparency (Tejedo & Araujo, 2015). Serrano-Cinca et al. (2009) find that e-government has positive relationship with financial transparency in local government website. Therefore, our fourth hypothesis is:

Hypothesis 4: E-Government affects financial transparency in local government website.

Internet visibility is one of the variables in environment factors in this study. According to Serrano-Cinca et al. (2009), the use of internet visibility is more appropriate to be used when we talk about transparency through the internet than press visibility used by Laswad et al. (2005). Serrano-Cinca et al. (2009) use popularity of website as one of the proxies of internet visibility which reflects the position/rank of a website in search engine such as Google, MSN, or Yahoo. The higher the rank/popularity of a website, then the website will appear in the highest position as search result in a search engine so that there will be more visitors who checked the website. The number of visitor will provide pressure to the local government to provide useful content such as financial information on regular basis in their website. Thus, local government that has popular website will perform higher financial transparency (Serrano-Cinca et al., 2009). Serrano-Cinca et al. (2009) and Alcaraz-Quiles et al., (2014) find that internet visibility has positive relationship with online transparency. Therefore, our fifth hypothesis is:

Hypothesis 5: Internet visibility has positive effect on financial transparency in local government website.

Income per capita is an indicator to measure public welfare. According to Styles & Tennyson (2007), local government that has high income per capita will get high public monitoring. This is due to this type of government tend to have more active populace. As a result, public needs more information in order to evaluate the performance of the local government (Rajnoha et al., 2017). Therefore, local government with higher income per capita will have higher financial transparency as a form of compliance with such public pressure. Styles & Tennyson (2007) and Serrano-Cinca et al. (2009) prove that income per capita has positive effect on financial transparency in government website. Besides that, Martani & Fitriasari (2014) also find positive effect on financial transparency and performance in local government website in Indonesia. Thus, the sixth hypothesis in this study is:

Hypothesis 6: Income per capita has positive effect on financial transparency in local government website.
3. Research method

a. Sample

The population in this study is all local government at district and municipal level in Indonesia in 2015. The year of 2015 is selected because when this study is conducted, the last financial information update that can be performed by local government through the official website is in 2015. In this study, the sample frame is district and municipal governments that are included in the List of Autonomous Government in Indonesia 2015. Meanwhile, samples are selected using purposive sampling technique with the following criteria: (1) district and municipal governments included in the List of Autonomous Government in Indonesia 2015, (2) local government is not administrative municipality/district which includes five administrative municipalities and one administrative district in Daerah Khusus Ibukota Jakarta, (3) local government has accessible website and conduct information updating minimum in 2015, (4) local government publish audited LKPD in 2015 and is accessible, and (5) local government with accessible result of legislative election in 2014. Based on the criterias, we use 411 local government of Indonesia.

b. Operational definition and variable measurement

The dependent variables in this study is financial transparency in local government website, referring to Guillamón et al. (2011) and Vicente et al. (2013) study that use financial transparency indicators from Global Civil Society Organization International Transparency. According to Guillamón et al. (2011), financial transparency can be defined as the availability of information that are accessible by public regarding budgets, income & expenses, as well as surplus & deficit. The indicator is then adjusted with the Instruction of Ministry of Interior No.188.52/1797/SJ of 2012 regarding Transparency of Local Government Budget Management to capture the condition in Indonesia better. The adjustment process can be seen in the appendix.

Based on the adjusted financial transparency indicator checklist, the next stage is conducting observation on each local government website to assess the availability of information based on the checklist. If the information is available, we assign 1 as score, and if the information is unavailable, we assign 0 as score. Financial transparency index in local government website will be obtained based on the division of score from each local government with total checklist of 28 items (appendix).

Furthermore, referring to the study conducted by Serrano-Cinca et al. (2009), we classified local government based on two categories. The classification is performed because, according to Martani & Fitriasari (2014), local government financial transparency index is still very low. Besides that, based on the observation, there are more than 50% of the samples do not implement financial transparency based on the criteria in the index. Because of this, to avoid the reduction of samples more than 50%, this classification is made. The classification of local government is presented in Table 1.

<table>
<thead>
<tr>
<th>No</th>
<th>Assessment Guidelines</th>
<th>Score (Y)</th>
<th>Predicate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Local government get financial transparency index of 0% based on the checklist</td>
<td>0</td>
<td>Do not perform financial transparency</td>
</tr>
<tr>
<td></td>
<td>for financial transparency indicators.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Local government get financial transparency index above 0% based on checklist</td>
<td>1</td>
<td>Perform financial transparency</td>
</tr>
<tr>
<td></td>
<td>for financial transparency indicators.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: composed by the authors

Meanwhile, the independent variables in this study are as follows; Local government size (SIZE) is defined as the size of local government (Laswad et al., 2005). Tax per capita (TAX) is the average income from tax paid by the population of an area, collected by the local government in certain period of time (Serrano-Cinca et al., 3 Source: http://otda.kemendagri.go.id/
Local government political power (POLSTRENGTH) is described as the presence of coalition in the government that might affect policy, especially transparency policy (Tejedo-Romero and de Araujo, 2015). E-government (EGOV) is an effort in governance through electronic media, in order to improve the quality of service effectively and efficiently, transparently, and accountably (Inpres No.3 of 2003). Internet visibility (LINKS) is defined as the popularity of a website that reflects the position/rank of the website in the search engine such as Google, MSN, or Yahoo (Serrano-Cinca et al., 2009), and Income per Capita (IPC) is the average income of the population in a country/local area that represent the level of community welfare in a country/local area (Martani and Fitriasari, 2014). The measurement of each variable in this study is presented in Table 2.

### Table 2. Operational Definition and Variable Measurement

<table>
<thead>
<tr>
<th>Variable</th>
<th>Acronym</th>
<th>Measurement</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Transparency in Local Government Website</td>
<td>FTI</td>
<td>The adjustment from the indicators of financial transparency (International transparency) and TAPD (Instruction of Ministry of Interior), perform=1, does not perform=0</td>
<td>(Guillamón et al., 2011; Serrano-Cinca et al., 2009; Vicente et al., 2013)</td>
</tr>
<tr>
<td>Local Government Size</td>
<td>SIZE</td>
<td>Local government’s total assets</td>
<td>(Garcia and Garcia-Garcia, 2010; Martani and Fitriasari, 2014; Serrano-Cinca et al., 2009; Styles and Tennyson, 2007)</td>
</tr>
<tr>
<td>Tax per capita</td>
<td>TAX</td>
<td>Total local taxes and retribution divided by the total population in the area</td>
<td>(Guillamón et al., 2011)</td>
</tr>
<tr>
<td>Local government political power</td>
<td>POLSTRENGTH</td>
<td>The number of local legislative members of the regional government coalition divided by the number of regional legislative members</td>
<td>(Guillamón et al., 2011; María del Carmen, Bolívar, and Hernandez, 2014; Tejedo-Romero and de Araujo, 2015)</td>
</tr>
<tr>
<td>E-government</td>
<td>EGOV</td>
<td>Dummy variable, 1 if local government has been ranked in Pemeringkatan e-Government Indonesia (PeGI) and 0 if they have not during 2011-2015</td>
<td>(Serrano-Cinca et al., 2009)</td>
</tr>
<tr>
<td>Internet visibility</td>
<td>LINKS</td>
<td>Link popularity, natural logarithm of total websites ranked higher on the search result than local government website</td>
<td>(Alcaraz-Quiles et al., 2014; Serrano-Cinca et al., 2009)</td>
</tr>
<tr>
<td>Income per capita</td>
<td>IPC</td>
<td>Gross Regional Revenue divided by the total population in the area</td>
<td>(Martani and Fitriasari, 2014; Styles and Tennyson, 2007)</td>
</tr>
</tbody>
</table>

Source: composed by the authors

c. Data analysis method

We use logistic regression analysis to test the hypothesis. Based on the formulation of problems and framework described previously, the logistic regression model used in this study is as follows.

\[
\ln \left( \frac{P}{1-P} \right) = \alpha + \beta_1 \text{SIZE} + \beta_2 \text{TAX} - \beta_3 \text{POLSTRENGTH} + \beta_4 \text{EGOV} + \beta_5 \text{LINKS} + \beta_6 \text{IPC} + \mu
\]

Notes:

- \( \ln \left( \frac{P}{1-P} \right) \): Probability of local government performing financial transparency in local government website.
- SIZE: Size of local government.
- TAX: Tax per capita.
- POLSTRENGTH: Local government political power.
- EGOV: Indonesia e-government ranking (Pemeringkatan e-Government Indonesia-PeGI).
- LINKS: Links Popularity.
- IPC: Income per capita.
- \( \alpha \): Constant.
- \( \beta_1 - \beta_6 \): Coefficient of regression.
- \( \mu \): Error.
Further, hypothesis testing is performed through the following stages: assessment of regression model fit, assessment of overall model, omnibus test of model coefficient, coefficient of determination ($R^2$), and coefficient of regression (partial test).

### 4. Results and Discussion

From the total of 411 samples, the data on minimum, maximum, mean, and standard of deviation are presented in Table 3.

#### Table 3. Descriptive Statistic and Correlation

<table>
<thead>
<tr>
<th></th>
<th>FTI</th>
<th>SIZE</th>
<th>TAX</th>
<th>POLSTRENGHT</th>
<th>EGOV</th>
<th>LINKS</th>
<th>IPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>411</td>
<td>411</td>
<td>411</td>
<td>411</td>
<td>411</td>
<td>411</td>
<td>411</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.000</td>
<td>27.030</td>
<td>9.720</td>
<td>0.000</td>
<td>0.000</td>
<td>5.080</td>
<td>9.030</td>
</tr>
<tr>
<td>Maximum</td>
<td>1.000</td>
<td>31.330</td>
<td>15.290</td>
<td>1.000</td>
<td>1.000</td>
<td>15.080</td>
<td>12.910</td>
</tr>
<tr>
<td>Mean</td>
<td>0.460</td>
<td>28.400</td>
<td>11.650</td>
<td>0.350</td>
<td>0.510</td>
<td>10.060</td>
<td>10.400</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>0.500</td>
<td>0.650</td>
<td>0.820</td>
<td>0.190</td>
<td>0.500</td>
<td>2.180</td>
<td>0.630</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>FTI</th>
<th>SIZE</th>
<th>TAX</th>
<th>POLSTRENGHT</th>
<th>EGOV</th>
<th>LINKS</th>
<th>IPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source: composed by the authors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on descriptive statistic data, we can know that financial transparency in local government website is still very low with mean score of 11% with standard deviation of 16%. The lowest score for the index is 0%, which is acquired by more than half of the samples or in 223 districts and municipalities. While the maximum score is 57.1% in seven districts and municipalities which includes Pekalongan, Banda Aceh, and Makassar municipalities and Gianyar, Jembrana, Jombang, and Trenggalek districts.

Then, hypothesis testing using logistic regression is performed to find if the probability of dependent variable to occur can be predicted based on the independent variables. The result of logistic regression is presented in Table 4.
### Table 4. Result of Logistic Regression

<table>
<thead>
<tr>
<th></th>
<th>Exp. Sign</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>Df</th>
<th>Sig.</th>
<th>Exp. (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZE</td>
<td>+</td>
<td>0.576</td>
<td>0.207</td>
<td>7.743</td>
<td>1</td>
<td>0.005*</td>
<td>1.780</td>
</tr>
<tr>
<td>TAX</td>
<td>+</td>
<td>0.56</td>
<td>0.164</td>
<td>0.117</td>
<td>1</td>
<td>0.732</td>
<td>1.058</td>
</tr>
<tr>
<td>POLSTRENGTH</td>
<td>-</td>
<td>0.565</td>
<td>0.564</td>
<td>1.003</td>
<td>1</td>
<td>0.317</td>
<td>1.759</td>
</tr>
<tr>
<td>EGOV</td>
<td>+</td>
<td>0.613</td>
<td>0.217</td>
<td>8.448</td>
<td>1</td>
<td>0.004*</td>
<td>1.879</td>
</tr>
<tr>
<td>LINKS</td>
<td>+</td>
<td>0.149</td>
<td>0.54</td>
<td>7.470</td>
<td>1</td>
<td>0.006*</td>
<td>1.211</td>
</tr>
<tr>
<td>IPC</td>
<td>+</td>
<td>0.191</td>
<td>0.210</td>
<td>0.830</td>
<td>1</td>
<td>0.362</td>
<td>1.211</td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td>-21.212</td>
<td>5.350</td>
<td>15.722</td>
<td>1</td>
<td>0.000*</td>
<td>0.000</td>
</tr>
<tr>
<td>-2Loglikelihood</td>
<td></td>
<td>54.989</td>
<td></td>
<td></td>
<td></td>
<td>0.000*</td>
<td></td>
</tr>
<tr>
<td>Hosmer and Lemeshow</td>
<td></td>
<td>5.406</td>
<td></td>
<td></td>
<td></td>
<td>0.713</td>
<td></td>
</tr>
<tr>
<td>Nagelkerke R Square</td>
<td></td>
<td>0.167</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** composed by the authors

The result of regression model fit using Hosmer and Lemeshow goodness of fit and Omnibus Tests of Model Coefficients (-2Loglikelihood) show consistent result. The result of testing using Hosmer and Lemeshow shows no significant chi-square score (0.713) thus, we can conclude that the model is fit with the data. Meanwhile the result of testing using Omnibus Tests of Model Coefficients shows significant chi-square so that we can conclude that there is relationship between independent variables and dependent variable in this study. Further, the testing on coefficient of determination in logistic regression using the result of Nagelkerke R square shows coefficient of determination of 0.167 which means that independent variables explain 16.7% variations in dependent variable, while the 83.3% are affected by another factor that is not tested in this model.

Based on the result of regression testing in Table 4, local government size has coefficient of 0.576 with significance level of 0.005. The significance level is below $\alpha = 0.01$, thus the first hypothesis ($H_1$) is supported, which means local government size has positive effect on financial transparency in local government website. This supports the study conducted by García & García-García (2010), Serrano-Cinca et al. (2009), Styles & Tennyson (2007), and Martani & Fitriasari (2014) which prove that local government size has positive effect on financial transparency through website. Local government with large size usually have problem with the management of resources. This is because local government has a lot of programs/public services. Thus, local government with large size will faces strong pressure from large population regarding the openness of information in assets management which makes local government to perform financial transparency to reduce information asymmetry. Besides that, local government with large size will be easier in performing financial transparency because they have adequate facilities and infrastructures compared to local government with smaller size.

Tax per capita has coefficient of 0.56 with significance of 0.732. The significance level is above $\alpha = 0.01$, thus second hypothesis ($H_2$) is not supported, which means tax per capita does not affect financial transparency in local government website. This might be caused by local government budget to fund the government not only from income collected from the community, but also from transfer funds from the central government. Besides that, the comparison between locally generated revenue (Pendapatan Asli Daerah-PAD) and general allocation funds (Dana Alokasi Umum-DAU) is still low as presented in figure 1 below. This shows that most local government still depends on the fundings from the central government. The level of local government dependency on the central government may explain as why tax per capita does not affect the level of financial transparency in local government website.
The variable political power has coefficient of 0.565 and significance level of 0.317. The significance level is above $\alpha = 0.05$, thus the third hypothesis ($H_3$) is not supported, which means local government political power does not affect financial transparency in local government website. Local government political power, measured using the percentage of DPRD members from coalition parties that support current government. Based on Gallagher, Laver, & Mair (2011) there are two factors that encourage the formation of coalition, similarity in ideology (ideologically-connected coalition) and the necessity to win political battle (minimal-winning coalition). The formation of coalition at the local government level tends to follow the second type, minimal-winning coalition. This is reflected from the variations of coalition among political parties at the local government level. The second type coalition is more vulnerable because it has no ideological relationship in its formation process. Besides that, the narrowness of time in building coalition also degrade the quality of coalition formed and thus will only focused on pragmatist interest, such as distribution of political position in the government. The low quality of coalition may explain as why local government political power does not affect financial transparency in local government website.

E-government has coefficient of 0.613 and level of significance 0.004. The significance level is lower than $\alpha = 0.05$, thus the fourth hypothesis ($H_4$) is supported, which means e-government affects the financial transparency in local government website. This result supports Serrano-Cinca et al. (2009) study which find that the implementation of e-government will make local government to be more transparent. The implementations of e-governmetn will encourage the improvement in financial transparency through internet as aimed by e-government, to improve public service effectively and efficiently, transparently, and accountably. Besides, the Presidential Instruction Number 3 of 2003 which specifically regulates the obligation to manage website and publication of financial document through local government website periodically. Because of that, through this result we can conclude that the implementation of e-government at local government level is very effective to encourage financial transparency in local government website.

Internet visibility has coefficient of 0.149 and level of significance of 0.006. The significance level is below $\alpha = 0.05$, thus the fifth hypothesis ($H_5$) is supported, which means internet visibility affects financial transparency in local government website. This result supports Serrano-Cinca et al. (2009) and Alcaraz-Quiles et al. (2014) studies which prove that internet visibility has positive effect on financial transparency through website. Using website popularity as proxy, local government with popular website will have large number of visitors. The large number of visitors will bring high pressure to the local government. The pressure may come as the demand to perform financial transparency regarding the governing activities or provision of useful contents for the people. Therefore, local government with popular website will perform financial transparency to fulfil these demands. This is done to reduce information asymmetry and maintain the popularity of the website.
Income per capita has coefficient of 0.191 and level of significance of 0.362. The level of significance in above $\alpha = 0.05$, therefore the sixth hypothesis ($H_6$) is not supported. This means that income per capita does not affect financial transparency in local government website. Income per capita is a proxy to measure the level of prosperity in an area by measuring the average income in the area. Income per capita does not affect the average income in the area if the distribution of income in the area is uneven. Income inequality in an area can be seen from gini ratio. Based on the data from BPS, in 2015, gini ratio in Indonesia is quite large. The level of gini ratio can be seen in the figure 2 below.

Fig. 2. Gini Ratios in Rural and Urban Area in Indonesia 2015

Source: composed by the authors

Gini ratio with 0 (zero) value shows that there is a perfect income distribution, which is every people has equal income. Meanwhile, the value 1 (one) shows that there is an income gap. Graphic 4.1 shows that there is an income gap in income distribution in Indonesia in 2015, with gini ratio reaching 0.402. This inequality shown mostly in urban area. While in rural area the inequality is smaller. The value of ratio gini the reason why income per capita does not affect financial transparency in Local Government website.

5. Additional Test

Robustness test is conducted because this research uses dummy variable to measure financial transparency in Local Government website, thus the quality of financial transparency is not reflected in the measurement. Therefore, the dependent variable that will be used in this robustness check is financial transparency index on the information disclosed in Local Government website. Moreover, a linear regression analysis will be used to evaluate the model.

That test will be conducted using smaller sample size as much as 188 Municipality or City Government in Indonesia, because most of the Municipality and City Governments do not conduct a financial transparency practice in their website. However, the result of regression analysis (F test) shows that the independent variables do not affect dependent variable, or the model is not fit. Moreover, the classical assumption test results show that the model does not distributed normally (normality test), even though other classical assumption tests has been met. The problem with model fit can be solved by adding a dummy variable namely ‘LOCATION’, which signifies the location of Local Government (on Java and outside Java). However, to meet the normality assumption, outlier sample should be deleted, which resulted with 130 Local Governments as research sample. Afterward, data transformation is conducted on the dependent variable, thus normality assumption can be met.

Based on the result of analysis result, as presented in table 5, the result of regression test using transparency index shows an inconsistent result with the initial research model. The result shows that tax per capita and e-government has an effect on financial transparency, while Local Government’s size, Local Government’s political power, internet visibility, income per capitá, and location does not have an effect on financial transparency. The e-government variable shows a significant result in both regression models; thus, it can be concluded that e-government has a significant effect on financial transparency in Local Government’s website. The size of sam-
ple, which is too small, might be one of the factors that affect the inconsistent result of robustness test. Therefore, if this research uses greater sample, thus there is a possibility that the factors will shows a significant effect on dependent variable. These factors are the reasons why further research on these topics should be conducted.

<table>
<thead>
<tr>
<th>Model</th>
<th>FTI-ADJUSTED</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Constant</strong></td>
<td>0.874</td>
<td>0.031b</td>
</tr>
<tr>
<td>SIZE</td>
<td>+ -0.027</td>
<td>0.107</td>
</tr>
<tr>
<td>TAX</td>
<td>+ 0.023</td>
<td>0.073c</td>
</tr>
<tr>
<td>POLSTRENGTH</td>
<td>- -0.053</td>
<td>0.315</td>
</tr>
<tr>
<td>EGOV</td>
<td>-0.075</td>
<td>0.000a</td>
</tr>
<tr>
<td>LINKS</td>
<td>+ 0.001</td>
<td>0.898</td>
</tr>
<tr>
<td>IPC</td>
<td>+ 0.006</td>
<td>0.714</td>
</tr>
<tr>
<td>LOCATION</td>
<td>0.027</td>
<td>0.237</td>
</tr>
<tr>
<td>F Value</td>
<td>2.565</td>
<td></td>
</tr>
<tr>
<td>Sig.</td>
<td>0.017</td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.128</td>
<td></td>
</tr>
<tr>
<td>Adj. R²</td>
<td>0.078</td>
<td></td>
</tr>
</tbody>
</table>

*Source:* composed by the authors

**6. Conclusion**

This research aims to examine the effect of entity characteristics namely Local Government’s size and tax per capita, political factor namely political power and e-government, as well as environmental factor namely internet visibility and income per capita on financial transparency in Local Government’s website. Hypothesis test result shows that Local Government’s size, e-government, and internet visibility has a positive effect on financial transparency in Local Government’s website. Meanwhile, tax per capita, Local Government’s political power, and income per capita does not have a significant effect on financial transparency in Local Government’s website.

The result of this research is useful for: (1) regulator (policy maker), in this matter the Ministry of Internal Affairs, in revising the previous Ministrial of Internal Affairs Instruction Number 188.52/1797/SJ of 2012 regarding the Enhancement of Local Government Budget Management Transparency by adding financial information that needed to be disclosed in the website and additional clause or article about reward and punishment as a motivation for the Local Governments to publish more financial information through website, (2) Ministry of Communication and Informatics needs to conduct an assistance to encourage the implementation of e-government at Local Government level, thus the implementation of e-government can reach fourth stage, that is utilization stage, which will leads to more transparent governance, and (3) the Ministry of Internal Affairs should establish an uniformed website interface for the local governments, thus the website will be more presentable, informative, and popular, which will facilitate local governments’ to enhance their transparency through the website.

This research uses dummy variable to measure financial transparency in local government websites and e-government, thus the next research is expected to use financial transparency index that based on financial transparency indicator along with the improvement in the level of financial transparency published in local governments’ website in Indonesia. Moreover, along with the PeGI survey conducted by Ministry of Communication and Informatics in the whole municipality and city governments in Indonesia, the next research can use the result of PeGI survey due to its quality that can represent the quality of the implementation of e-government in Indonesia. Addition of others variables such as entity characteristics, political stability as political proxy, and education level as environment factors can be done to get a more comprehensive result.
References


Appendix 1. The Adjustment of Financial Transparency Indicator in Website

<table>
<thead>
<tr>
<th>No</th>
<th>Indicators of Financial Transparency (NGO International Transparency)</th>
<th>Financial Transparency (Ministrial of Internal Affairs Instruction Number 188.52/1797/SJ of 2012)</th>
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<td>1</td>
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<td>Publication in current data in menu “Local Government Budget Management Transparency” including:</td>
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<td>a. Annual financial report published</td>
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<td>a. Audited Local Government Financial Statements;</td>
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<td>b. Publication of the annual financial report approval date</td>
<td>b. Regional Regulation Draft on APBD (Anggaran Pendapatan dan Belanja Daerah-APBD) and Regional Regulation Draft on APBD amendment delivered to the Head of Local Government and Regional People’s Representative Assembly (Dewan Perwakilan Rakyat Daerah-DPRD);</td>
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<td>d. Publication of the budget approval date</td>
<td>d. Summary of SKPD Budget Implementation Document (Dokumen Pelaksanaan Anggaran/DPA-SKPD) and Summary of PPKD Budget Implementation Document (Dokumen pelaksanaan Anggaran PPKD/DPA-PPKD)</td>
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<td>e. Publication of budget changes approved</td>
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<td>e. Regional Regulation on APBD amendment</td>
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<td>f. Publication of the budget of the decentralized entities and municipal corporations</td>
<td>f. Audited Local Government Financial Statements (Laporan Keuangan Pemerintah Daerah-LKPD) and Auditor’s opinion on LKPD</td>
<td>f. Regional Regulation on APBD Amendment</td>
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<td>g. Regularly publication of information on budget execution (minimum monthly)</td>
<td>g. Publication of Regional Owned Entrepreneur (Badan Usaha Milik Daerah-BUMD) Budget</td>
<td>g. Regional Regulation on APBD Amendment</td>
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<td>i. Companies and other municipal agencies</td>
<td>i. Publication of APBD approval</td>
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<td>j. Summary of PPKD Budget Implementation Document (DPA-PPKD)</td>
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<td>j. Surplus (deficit) per capita</td>
<td>k. Publication of Auditor’s opinion on LKPD</td>
<td>k. Publication of APBD amendment</td>
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<td>k. Fiscal autonomy (tax revenue / total revenues)</td>
<td>l. Publication of Auditor’s opinion on BUMD</td>
<td>l. Publication of APBD amendment</td>
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<td>m. Publication of Regional Owned Entreprise (Badan Usaha Milik Daerah-BUMD) Budget</td>
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### Indicators of Financial Transparency (NGO International Transparency)

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<td>Transparency on municipal revenues and expenditures (5)</td>
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<td>c. Investment per capita (investment expenditure/population)</td>
<td>d. Average payment period (outstanding liabilities x 365 / total expenditures)</td>
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<td>d. Average payment period (outstanding liabilities x 365 / total expenditures)</td>
<td>e. Average collection period (outstanding credits x 365 / total revenues)</td>
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<td>3. Transparency on municipal debt (4)</td>
<td>Transparency on municipal debt (4)</td>
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<td>a. Publication of the municipal debt</td>
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<td>c. Debt per capita (current financial liabilities/population)</td>
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<td>d. Relative debt (debt/ total budget)</td>
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**Source:** composed by the authors

### Biographical notes:

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IMPACT OF REPORTING OF DEFERRED TAX ON SUSTAINABLE DEVELOPMENT OF A COUNTRY: CASE OF CZECH REPUBLIC

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Abstract. Achievement of high quality of accounting information in financial statements requires thorough adherence to generally accepted accounting principles. In connection with deferred tax, this concerns especially the prudence principle and the going concern principle. The deferred tax also has an impact on fiscal sustainability in any given country. The aim of this contribution is to evaluate how information about deferred tax is reported by small and medium sized enterprises in Czech Republic and evaluate quality of such reporting. The research was conducted in the form of a questionnaire survey concerning recognition of deferred tax among accounting units which prepare their financial statements according to IFRS or according to Czech accounting standards. The entities that stated in the questionnaire that they recognize deferred tax were further analysed in more detail. The survey revealed that the standard does not take into consideration that small and medium-sized enterprises would not have to account for deferred tax. The research clearly showed the unwillingness of accounting entities to recognize deferred tax voluntarily.

Keywords: financial statements; sustainable development; small and medium-sized enterprises (SMEs); deferred tax; deferred tax liability; deferred tax asset; sustainability; Czech Accounting Standards


JEL Classifications: M41

1. Introduction

Companies listed in the commercial register are obligated to release their financial statements, which are a fundamental source of information for the decision-making processes of other entities who are in any connection with such entity. According to Dumitru (2012) and Paseková et al. (2017) accounting information should be collected and presented in such a way so as to be able to respond both to the requirements of given entity for its future use by the company and also to respond to informational needs of its partners and other users of financial statements. In a way, the quality of the information offered by the financial statements becomes a purpose in itself and it should bring an added value to the financial reporting frame of a country, help sustain the financial system itself and support economic growth of a country. Certain transactions recorded in account-
ing are strongly influenced also by legal regulations of given, especially by tax laws. Historically the tax laws in Czech Republic are tightly connected with the accounting and are significantly influencing accounting and accounting principles themselves.

Due to the diverging concepts of accounting approach and tax legislation in the area of expenses and revenues, there are significant differences between calculated accounting profit and the tax profit which is a base for income tax calculation.

The presented contribution focuses on the problem of recognition of deferred tax in small and medium-sized companies. It is precisely these businesses that are not obliged to account for deferred tax under Czech accounting law. The aim of conducted research was thus to ascertain whether small and medium-sized enterprises reflect deferred tax in their accounting and to get some indication supporting a hypothesis that if businesses are not obliged to account for deferred tax and recognize it, they do not do so, or only in a very limited way by a low number of companies.

Furthermore, the aim of this research is to see and confirm how the reporting of deferred tax it done by the companies which do not have to report it but they do it anyway, because the deferred tax has an impact on fiscal sustainability of a country. This impact is not as significant as for other, more typical taxes. But from the principle of deferred tax, it is clear that it can provide information about increase or decrease of income tax collection in the future and by doing this to contribute to forecasting of the future tax collection with respect to future cash-flows and thus contribute to better fiscal sustainability. That is why it can be said that deferred tax is one of the tools for application of the prudence principle, one of generally accepted accounting principles. A good tax system should bring sufficient revenues to the state treasury (Šimelytė Antanavičienė 2013; Luzgina 2017; Dobrovič et al. 2016; Giriūnienė, Giriūnas 2017), and should not deteriorate activity of a SME (Włodarczyk et al. 2017; Bikas et al. 2017; Jankelová et al. 2018; Illmeyer et al. 2017; Paseková et al. 2017).

The questionnaire survey method was used for data collection. The acquired data was then further analysed. The text that follows is divided into five chapters. In the first chapter the attention is focused on research of related literature, which is aimed on the information about deferred tax, the calculation methods, usage of deferred tax for earnings management and also the obligation of small and medium-sized enterprises to account for deferred tax. This chapter is followed by a chapter devoted to research methodology. The next chapter is then concerned with the acquired results and it is followed by a summary of the fundamental insights and the conclusions of our research.

2. The inspiration of Czech accounting legislation by International accounting standards in the area of deferred tax (the historical perspective)

Deferred tax is covered by International accounting standard no. 12 (IAS 12-Income Taxes). As stated in the introduction of this standard, its aim is to prescribe an approach to accounting solutions for income tax calculations from accounting profit. The fundamental question is how to account for current and future tax consequences of accounting transaction. In its development, the standard gradually went through various methods of calculating the deferred tax. In the beginning the deferral method was used (1979-1996); the standard then switched to the liability method by using the nominal approach. Use of this approach was permitted until 2000. The current amendment forbids this method and prescribes a calculation using the balance sheet method. Analysis of individual items is conducted from the perspective of the balance sheet and no longer from the profit and loss statement point of view. However, the evolution process of this standard has not yet ended. In March 2009 a new proposal for the revision of the standard was presented in response to remarks created by the initiative for the convergence of IFRS and US GAAP which started in 2002. The goal of this process was a convergence of IAS 12 standard with FAS 109 Accounting of Income Tax and minimization of their reciprocal differences. (Baštincová and Tužinský, 2011).

The standard defines basic terms which are interconnected and generate deferred tax. These are especially
temporary differences which can be taxable in the future (taxable temporary differences) and the result thereof is a deferred tax liability, or contrariwise, temporary differences deductible in the future (deductible temporary differences), the result of which is a deferred tax asset. The standard requires accounting units to account for deferred tax in the same way as they would for transactions which elicit this tax. Therefore, in transactions which are accounted for nominally, deferred tax is also accounted for nominally, whereas in transactions which are recorded directly in to the equity, deferred tax is likewise accounted for directly in equity (International Accounting Standards Board).

Czech accounting legislation underwent a similar evolution in the past. Deferred tax first appeared in the measures of the Ministry of Finance which amended accounting classifications and accounting methods in connection with the accounting reform at the beginning of the 1990s. In the beginning there was a very limited circle of accounting units which were obliged to account for deferred tax (only companies that were part of a group) as was also the case for titles from which deferred tax was calculated (It was calculated only from differences between accounting and tax depreciation). Accounting for deferred tax was based on the liability method of the nominal approach. Regardless of the prudence principle, there was an obligation to account for both deferred tax liability and deferred tax asset.

For accounting in Czech Republic, the beginning of the new century was connected with a comprehensive amendment of accounting principles, which has also affected the deferred tax. The amendment of Accounting act from 2004 required accounting units to keep accounts so that the financial statements compiled on the basis of them may provide a fair and true view of the accounting entity’s financial situation (Section 7 Act No. 563/1991 Coll., on Accounting). Deferred tax represents one of the areas which helps fulfil this obligation. Part of this requirement is also to respect the prudence principle, which was likewise implemented directly into the Act. According to these act accounting units are to include only profits which were gained and, contrariwise, to take into account all foreseeable risks and possible losses which concern assets and liabilities known to them until the moment the financial statement is compiled in their financial statements (Section 25, para. 3 Act no. 563/1991 Coll., on Accounting). From this rule it is logical that if it is a known fact to an accounting unit that temporary differences have arisen between accounting and tax regulations which would result in a higher tax payable in the future, they should create a fund from disposable profit from a regular period for coverage thereof (deferred tax liability). On the other hand, if there is to be a lower payable tax in the future as a result of temporary differences, it will contrariwise be possible to increase disposable profit from a regular period by a sum which the accounting unit will be able to recover through savings on payable tax (deferred tax asset). (Decree No. 500/2002 Coll., Czech Accounting Standard No. 3). Due to a fact that the starting point of the Czech national amendment in the area of deferred tax was the IAS 12 international accounting standards, the differences between the Czech amendment and this standard are not in any way significant.

3. The information capability of deferred tax

According to Istudor et al. (2011), recognition of deferred tax enables better information capability of financial statements. Financial statements then reflect both really accounted for costs and the cost for deferred tax, which gives a rise to approach which is far closer to reality. Deferred tax helps to distribute taxes to several accounting periods (Geyer, 2014).

The pilot version of IAS 12 enabled accounting entities to choose whether they would use, whilst calculating deferred tax, the deferral method or the liability method. At the time, emphasis was placed especially on information presented in the profit and loss statement, and standard therefore preferred the deferral method over the liability method. According to Janoušková (2007), the deferral method ensured better adherence to the principle of assigning expenses to revenues with which they are connected objectively and in correct time frame, and thereby led to a more precise quantification of the economic result than by using the liability method. In certain cases, transactions connected with the creation of deferred tax are accounted directly against equity. According to Müllerová and Vančurová (2006) deferred tax has to be accounted for like this, for the rule applies that deferred tax is accounted for in the same way as the transaction which elicited it.
Poterba et al. (2011) further states that the majority of companies recognize a deferred tax liability rather than a deferred tax asset. Depreciation is then indeed the greatest source of temporary differences. According to Dhaliwal (2013) it is possible on the basis of the dispersal of deferred tax assets to assess whether a given business will make adequate profits in the future. Financial Accounting Standard Board (FASB) indicates that supplementary information on a deferred tax asset or liability should be stated in an appendix to the financial statement (Philips et al., 2003). Graham et al. (2012) add that it is precisely notes on deferred tax in the appendix and the harmonization of the tax and accounting profit/loss that can provide users of the financial statement with information on the viability of a given company.

Lev and Nissim (2004) further document the positive relationship between the future growth of the economic result and the proportion of the taxable economic result and the accounting profit/loss. A change from accelerated to linear depreciation increases deferred tax and increases the economic result (Lev and Nissim, 2002). According to Lev and Nissim (2002), similar accounting procedures which have an impact on deferred tax are thoroughly standard and reduce the ability of deferred tax to provide information on the quality of business activity.

Philips et al. (2003) state that a deferred tax expense provides information on earnings management prior to taxation. Murdoch et al. (2015) add that using deferred tax can improve forecasts of income tax payments in comparison with using only current income tax. Profit is an important base for various indicators of financial analysis. According to Müllerová (2005), by correctly accounting for deferred tax, the accounting entity can acquire more realistic values of these financial indicators and avoid the distortion thereof caused by overestimation of disposable profit. In addition, improved comparability with sectorial indicator values or values acquired from the data of competing businesses is achieved. Also Colley et al. (2012) report the influence of deferred tax on financial indicators, especially debt-to-equity ratio.

4. Deferred tax in small and medium-sized enterprises

The small and medium-sized enterprise sector plays an irreplaceable role in any developed economy (Kozubíková et al., 2015) and are at present the centre of attention of theoretical research within the European Union (Belás et al. 2015; Benešová et al. 2018) state that quality business environment creates favourable conditions for the development of SMEs as they represent an important part of the national economic system. Not only economic criteria but also social, educational, cultural, and other factors are playing an important role in this process (Ključnikov et al. 2016, Smekalova et al. 2014, Dobeš et al. 2017; Abbas 2018).

According to data from the Ministry of Industry and Trade of Czech Republic, small and medium-sized enterprises represent more than 1 million economic subjects; they account for 61.52 % of employment and 54.57 % of accounting added value. The proportion of these businesses in the total number of active entrepreneurial subjects is 99.83 %. Support of small and medium-sized entrepreneurship is currently connected with the requirement of reducing the administrative burden for these businesses, which has an impact also on the area of accounting and financial reporting. One of these reliefs is the possibility to compile a simplified financial statement, which entails a condensed financial statement and simpler Notes. In contrast to this, there is no doubt that there is the unified European Union market, which requires uniform legal norms and standardization also in the area of financial reporting for small and medium-sized enterprises. (Ministry of Industry and Trade)

Decree No. 500/2002 Coll. states in Section 59 which accounting entities are obliged to account for deferred tax. Obligated to do so are mainly those companies which form a consolidated group due to unified accounting rules for compilation of a consolidated financial statement. Then there are accounting entities which compile a full financial statement: these include all joint-stock companies. Then from the remainder of trade corporations, those which are obliged by law to have their financial statements verified by an auditor (see Section 20 Act No. 563/1991 Coll. on accounting). Other accounting entities can (but do not have to) account for deferred tax and recognize it voluntarily. It therefore stems that small and medium-sized enterprises are obliged to account from deferred tax only to a limited extent.
5. Methodology

The data for the survey was acquired by a questionnaire survey. Students who visited small and medium-sized enterprises in the Czech Republic for this purpose took part in the study data collection. The selection of visited companies was left to the students but the number of employees was required to not exceed 250. The number of employees was the only criteria applied to distinguish the small and medium enterprises. The students contacted the heads of accounting department. Respondents’ replies described the situation at the current interviewing time. A total of 418 questionnaires were obtained. In each completed survey, the students stated the name of the business and the contact person. The origin of the data was randomly verified in roughly thirty businesses by the contact person via telephone and no issues were identified during verification process.

The questionnaire contained six questions. The first question ascertained whether deferred tax was recognized in the business. If the reply was negative, the respondents stated the reason for non-recognition. Other questions were aimed only at those respondents who answered positively to the first question. Replies to the questions provided information as to whether they recognize deferred tax as a deferred tax asset or a deferred tax liability. In the case of recognition of a deferred tax asset, the respondents stated why they decided to do so. Other questions then ascertained the reasons for recognizing deferred tax, what titles enter into the calculation of deferred tax and whether they elaborate the information on deferred tax in an appendix. The first two questions divided the respondents into three groups. The first group included respondents which do not recognize deferred tax; in the other group there are respondents which recognize deferred tax as a deferred tax liability (DTL); and finally, the third group comprises of respondents which recognize deferred tax as a deferred tax asset (DTA).

The financial statements of firms which were stated in the questionnaire that they recognized deferred tax were further analysed. We used quantitative methods to analyse the quality of presented information about deferred tax. We assessed whether the information stated in the financial statement is adequate from the perspective of its users. The following categories were used after this assessment: excellent supplementary information, supplementary information with partial shortcomings and inadequate supplementary information.

6. Empirical results and discussion

The results gained by questionnaire survey will be summarized in the first part of our paper. Questionnaires acquired from 418 businesses were analysed. Deferred tax is not recognized in approximately half (210 firms) of businesses; and among the other half of businesses which recognize deferred tax, approximately two thirds (136 firms) are those which recognize it as a deferred tax liability and one third of them (72 firms) as a tax deferred asset. Accounting entities which did not recognize deferred tax were asked questions which were intended to justify this fact, which is shown by the following figure (Figure 1). Respondents could state their own answer and not only choose from prepared ones.

![Fig. 1. Relative representation of reasons for not recognizing deferred tax](source: Authors' results)
Most respondents give objective reasons to justify non-recognition of deferred tax. Most frequently it is the non-existence of temporary and accounting differences (in small businesses, accounting and tax depreciation are equal; as a rule, neither adjusting items nor provisions are accounted). Another reason is the non-comprehension of the significance of deferred tax and the conviction stemming therefrom that its recognition makes no sense. Ignorance of the problem is a markedly less frequent substantiation, and a relatively small part of the respondents refer to the fact that they are not obliged to recognize deferred, furthermore, reasons for reporting of deferred tax asset were tested in case company reports it as such.

![Fig. 2. Relative representation of reasons for not reporting deferred tax as deferred tax offset](source)

Source: Authors’ results

For a dominant number of respondents, the reason for recognition of deferred taxes as deferred tax assets is the guarantee of generating future taxable profit. Only less than a quarter of monitored respondents use this method because it provides more accurate accounting results. Others consider this accounting procedure as the natural consequence of the reporting system. Less than a twentieth of monitored respondents did not justify the given choice.

The relative representation of titles entering into calculation of deferred tax is illustrated in Figure 3. The difference between accounting and tax depreciation enter the calculation of deferred tax in more than 80% of businesses. Similarly, to the formation of accounting provisions, the formation of accounting adjusting items is utilized in deferred tax calculation by approximately 40% of businesses. Approximately one fifth of businesses stated the title of transferred tax losses. Overestimation, fines and penalties, unsettled social and health insurance and retrospective tax assessment of liabilities is stated by less than 3% of businesses cases.

![Fig. 3. Relative representation of titles entering into the calculation of deferred tax](source)

Source: Authors’ results
It stemmed from the questionnaire that approximately half of the businesses which recognize deferred tax provide information on this tax and, as the case may be, on its structure in an appendix, the second half do not.

A deferred tax liability or asset represents resulting amount into which several titles may enter during its calculation as shown in Figure 3. In that case, Section 39 Para. 5 Ordinance No. 5/2002 Coll. lays down that accounting entities are to specify in a breakdown the deferred tax liability or asset and state the titles from which the resulting amount is comprised. The following figure shows how businesses which recognize deferred tax comply with this obligation.

![Fig. 4. Relative representation of businesses in groups according to whether they provide further information on deferred tax in an appendix](image)

Source: Authors' results

The primary goal of financial reporting is that the financial statement gives a true and fair view of assets, liabilities, the financial situation and the economic result, regardless of the business size. Generally accepted accounting principles serve towards fulfilling this requirement. One of them is the prudence principle, the consistent application of which enables keeping with other general accounting principle, that being the assurance of the uninterrupted continuance of the business in the foreseeable future. These requirements are the content of the accounting directive of the European Parliament and Council 2013/34/ES from 26 June 2013 on annual financial statements and consolidated financial statements. Likewise, the amendment of the accounting act which takes effect as of 1.1.2016 respects these regulations. It is precisely deferred tax that is one of the tools which helps to fulfill the caution principle and the going concern principle.

The actual recording and reporting of deferred tax assets or liabilities is performed in several steps. The first is the ascertainment as to whether the accounting entity is obliged to account for deferred tax. If the law does not directly impose this obligation on the accounting entity, it has to decide whether this will improve the information capability of its financial statements and whether they should compile them fully with the connected recognition of deferred tax or not. The results of the questionnaire survey clearly show the unwillingness of accounting entities to recognize deferred tax voluntarily.

The second step is the identification of temporary differences, from which title of deferred tax arises. According to accounting regulations which are in effect, deferred tax is calculated from all temporary differences. Besides the difference between the accounting and tax net book value of depreciated property caused by varying accounting and tax depreciation, other temporary differences also have to be taken into consideration. Adjusting items, provisions, contractual penalties from delays and other titles could be examples. In view of the fact that deferred tax is not a novelty in Czech accounting, accounting entities have, as a rule, been adequately acquainted with the main titles leading to the formation of deferred tax.

It is clear from the results of the questionnaire survey that the number of accounting entities that recognized a deferred tax liability dominates. This is given both by caution in the case of deferred tax assets and the fact
that a deferred tax liability usually arises from the title of dissimilar tax and accounting depreciation, which is the most frequent and most significant title, and its influence often dominates over titles leading to the formation of deferred tax liabilities. These results are identical also to those of Poterba et al. (2011). Accounting units are obliged to provide details on deferred tax (both a liability and an asset) in an appendix to the financial statement. In the event of non-recognition of deferred tax assets due to prudence, the accounting entity should not forget to substantiate this fact. It should, among others, state the amount of non-recognized deferred tax assets and a breakdown of the titles which caused the formation of partial deferred tax assets and liabilities. It stemmed from the questionnaire survey that half of the interviewed accounting entities do not state any information on deferred tax in an appendix.

We statistically tested Hypothesis 0: Number of entities which comment on their deferred tax in their financial statements and those who do not is independent to the fact whether they calculated deferred tax as a deferred tax asset or liability. Alternative hypothesis presumed dependence of both factors. Using of 2 test resulted in p-value of 0.44 (>> 0.05). This results leads to acceptance of Hypothesis 0. Thus no statistically significant relation between the way of reporting of deferred tax and the way how companies comment on it in notes was proven. Approximately a third of companies recognize deferred tax as a deferred tax asset. In accordance with the prudence principle, these firms have to expect that they will report a profit in the future adequately high enough to be able to apply this deferred tax asset in the future. According to the results of Belás, Bilan, Demjan and Sipko (2015), however, there is yet a large measure of uncertainty among Czech and Slovak entrepreneurs in connection with the preservation of their business activity given the consequences of the global financial crisis. The aim of the survey was to verify the hypothesis that if businesses are not obliged to account for deferred tax and recognize it, they do not do so, or only in very limited numbers and range. The results of the survey confirmed this hypothesis, and also pointed towards the reasons why this is so.

Conclusions

The accounting act obliges accounting entities to keep accounts so that the financial statement compiled on the basis thereof may provide a fair and true image of the subject of the accounting of the accounting entity’s financial situation (see Section 7 Para. 1 Act No. 563/1991 Coll.). Accounting for deferred tax is among the tools which enable the fulfilment of this required accounting principle. The fact that Decree No. 500/2002 Coll., as an accompanying regulation to this act, enables the majority of small and medium-sized enterprises not to account for deferred tax and not to recognize it is indeed a certain reduction of administrative burden for these businesses, although it is a contravention of the above-mentioned principles laid down by the law.

Increasing harmonization in an increasingly connected world cannot be halted. Discussion as to whether small and medium-sized businesses require thorough harmonization has been underway since the beginning of the new millennia. Objections from the sides of opponents of harmonization of financial reporting for these businesses (with the reason they are not businesses of international scale) are gradually weakening in the connected and globalizing world. Foreign investors, for whom the ability to orient themselves in business financial statements is fundamental, operate also with small and medium-sized businesses.

In 2009, the International Accounting Standards Board (IASB) published the Standard for Small and Medium-sized Enterprises, which stems from full IFRS, although it was modified for the needs of smaller entrepreneurial subjects. Although the Czech Republic has not yet implemented it (which cannot be ruled out in the future), it is an important fact that the standard does not take into consideration that small and medium-sized enterprises would not have to account for deferred tax.

The global economic environment requires the comparability and reliability of accounting information serving towards decision-making and management. US GAAP and IFRS are among the main harmonizing directions. The ever-growing harmonization of accounting standards will also have a growing influence on Czech accounting standards. This could provide a competitive advantage to firms which are already preparing for this situation (Šteker, 2012).
Company creates disposable source for covering of higher tax payable which will arise in the future by reporting deferred tax liability and disables the possibility of dispersing of this source. On the contrary reporting deferred tax asset which in its creation causes increase in disposable profit available for distribution should be approached with caution and only when it is certain that resources will be available to cover future higher tax payments. Accounting for deferred tax thus in the end can contribute to improved informational situation about expected future increase or decrease of tax collection from income tax, to improvement of predictions of such tax collection and by doing this also to better fiscal stability.

Aknowledgements

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Czech Republic. Decree No. 500/2002 Coll., which implements certain provisions of Act no. 563/1991 Coll., on Accounting, as amended, for reporting entities that are businesses maintaining double-entry accounting.


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SUSTAINABLE DEVELOPMENT PROCESSES: 
SERVICE SECTOR IN POST-INDUSTRIAL ECONOMY

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Abstract. The article deals with the development of one of the service sectors, which is considered an element of the economic basis of the post-industrial development stage. The author considers the main indicators of the sector growth in the most competitive OECD countries, as well as compares the main macroeconomic structural and dynamic indicators of business and professional services in the USA and Kazakhstan, which made it possible to identify the main positions of Kazakhstan’s lag. A comprehensive analysis of the dynamics and structure of the development of post-industrial services in Kazakhstan was carried out in all the significant parameters of the development of the types of services of this group that are available in domestic statistics. This made it possible to identify a group of development leaders; activities characterized by stability and a high market share, but weak dynamics; shrinking sectors. The negative trends in the development of the post-industrial services sector, determined as a result of the analysis and assessment, allow us to form a vision for further steps to develop them.

Keywords: post-industrial economy, business and professional services, analysis of dynamics and structure, assessment of the economic sector, Kazakhstan


JEL Classifications: O15, O5, O53; P4; P47

1. Introduction

A fundamental economic theory that reveals the basic factors of the development of a modern highly productive economy is the theory of the post-industrial society, which considers scientific and technological progress and the accompanying scientific and technological revolutions to be the main driving force. The latest scientific and technological revolution is characterized by a radical increase in the importance of the service sector, with the specific role of information and communication services and scientific research in the development of society and improvement of its welfare. (Rostow 1973, Toffler 2010). In fact, this theory provides for the basis for the development of knowledge about the driving forces of the modern society, which in the form of national innovation systems, innovative clusters, interactive scientific and educational structures, network communities, and information and communication technologies determine the country’s economic development and competitiveness in the modern world. (Bell 1986, Schwab, Porter, Sachs 2013).

A prominent feature of this complex system is the fact that it is largely based on high-quality services that determine the drivers of industrial production or are determined by them. The most significant structural shift
that allows diagnosing entry into the post-industrial stage of the development is represented by the dynamic growth of business and professional services, which, being introduced into the production process at its initial or intermediate stage, have a decisive influence on the final product or the end result in the form of a service (Milner 2010; Balayeva, Predvoditeleva 2010; Dudzevičiūtė et al. 2014).

All industries and firms of the modern economy, without exception, include these science-intensive services (information and communication, scientific and technical, management and other types of consulting) in their business processes in order to ensure the competitiveness of their products and preserve it in the long term perspective (OECD Innovation and Knowledge-Intensive Service Activities. 2006). For Kazakhstan, which has set a goal to enter the top thirty of the most competitive countries in the world, one of the urgent tasks of the development is the structural reorganization of the economy and the implementation of the development programs aimed at the formation of the modern post-industrial structure of the economy (State program of industrial-innovative development, State program “Information Kazakhstan – 2020”).

In scientific researches of the developed countries a significant array of studies are devoted to the development processes of services involving an intensive use of knowledge (e.g. Sarkar, Coelho, Maroco 2016; Zenka, Novotny, Slach, Ivan 2017; Zhou, Kautonen, Wang, 2017; Tvaronavičienė, Shishkin 2017; Zemlickiene et al. 2017; Mura et al. 2017; Sulphey et al. 2018).

A review of the latest publications in the post-Soviet space shows that the issue of the development of the service sector in the mainstream of the modern techno-economic paradigm is paid attention to in the works of V. Inozemtsev, V. Varnavsky, L. Demidova, G. Vainstein, V. Kondratiev, F. Alzhanova, D. Ivanova and others (Bell, Inozemtsev 2007, Varnavsky 2016, Resp. editors Demidova, Kondratiev 2010, Demidova 2008, Vainstein 2012, Kondratiev 2011, Alzhanova 2016, Ivanov 2016). At the same time, the Kazakh science has not implemented yet the systematic statistical research of the basic parameters and indicators of the sphere of post-industrial services in its full extent.

The purpose of the research is to assess the development of the post-industrial services sector in Kazakhstan to identify negative and positive trends in the dynamics and structural shifts, including in comparison with the developed countries of the world.

Methods of the research. In the process of the research, statistical methods of processing economic data were used, in particular methods of grouping, analysis of dynamics and structure.

Main results of the research

Since the service sphere is extremely heterogeneous and has a distinct specificity in the provision of different types of services, the transition from the industrial to the post-industrial stage of the economy led to the refinement of classification by the leading researchers and the services are divided into the following groups:

1) distributive services are trade, transport, communication;
2) producer services are services for production, including both high-tech business and professional services, as well as services of a service character (administrative). This group also often includes financial, insurance, realtor services.
3) social services are services for society (educational, medical, social security) and public services;
4) personal services are individual services that are represented by art, accommodation and food services, recreational and entertainment services, all sorts of home services (Kastels 2000, Singelmann 1978).

In our research, we used the OECD and NAICS classifications and the Kazakhstan methodology for the systematization of statistical data.

In Europe, a special classification is also applied for services that use knowledge intensively, according to which they are divided into high-tech, financial, market-service, and others, including, among others, social
services. This classification is based on the fact that knowledge and technologies based on it are applied in all types of services. For all its importance for countries that are only passing to the post-industrial stage of development, this classification is not quite appropriate, because many of these services are not science-intensive (Classification of science-intensive services used in the OECD).

In our research we relied on classifications that were more suitable for cross-country comparisons and identified a group of services whose belonging to the science-intensive sector was unquestionable.

The general classification of services used by OECD distinguishes the following fairly large groups:
- distributive services (trade, transport, accommodation and food services);
- information and communication services;
- financial and insurance services;
- services related to real estate;
- professional, scientific and technical services; administrative services;
- public administration services, compulsory social services: education, health;
- other services (OECD site).

The new system of standard industry classification (NAICS – North American Industry Classification System) used in the USA and other countries in the region replaced in 1994 the outdated Standard Industrial Classification (SIC), which no longer reflected the specifics of the post-industrial stage.

Large groups in the new system are:
- wholesale trade;
- retail trade;
- transport and warehousing;
- information services;
- finance, insurance, real estate transactions;
- business and professional services;
- education, health, social welfare services;
- cultural and entertainment and leisure services, including accommodation and food services, recreation;
- other private sector services;
- public sector services, including education and health, social security (Information site of the Bureau of Economic Analysis of the USA).

In our research, we will refer two following groups to the post-industrial services, based on the generally accepted interpretation of the knowledge economy (Ed. by Kirichenko 2016).

1) business and professional services;
2) information and communication services.

**Trends in OECD countries.**

An assessment of the dynamics of the development of the service sector in the Eurozone and OECD countries that occupy the first positions in the global competitiveness ranking allows us to conclude that the average values for the Eurozone are significantly different from those of the leading countries. (Figure 1.)
Throughout the Eurozone, the leader of the economic growth over the period under consideration is communication and information services: the growth rate is 118.1%, which is higher than in all other activities. Business and professional services have an increase of 100.1%, which is generally lower than that of agriculture and financial services, but higher than in industry and construction. If to consider the most developed countries, then in these countries the growth rates of business and professional services certainly speak of their leadership. In Switzerland, Great Britain and Austria technical, scientific, and professional services are the leaders of the economic growth: 119%, 125.2%, and 116.8%, respectively. Information services in many countries are among the leaders in terms of the economic growth: Switzerland - 110.9%, Great Britain - 114.7%, France - 116.5%. In South Korea, information and business services have grown almost the same: 129.5% and 129.3%. South Korea is the only country, where industry is growing as intensively as business and professional services.

Trends in the USA.

According to the share in GDP in 2016, business services rank third after financial and insurance activities (20.3%), industry (15.4%), business and professional services for business (11.1%) (Table 1). For the period from 2012 to 2016 there is a growth trend in the aggregate GVA for the economy of the share of professional and business services by 0.3 percentage points and net profit for the household by 0.1 percentage points. During the period under consideration, there were positive structural shifts in the share of GVA and net profit for all types of services except for legal ones, whose share was reduced by 0.1%. (The period was taken by us to ensure comparability of statistical data for the USA and Kazakhstan, since the latest data for Kazakhstan are presented for 2016 (http://www.stat.gov.kz).

The index of physical volume for business and professional services is 112.5% and is at the level of the average index for the production of services in the private sector, which has amounted to 112.8%. In terms of the share of employment, business and professional services occupy the third place, and if to consider only the private sector, then the second one after a group of social services (education, health, social services). The share of employed in business professional services is 13.4% in 2016, and 15.0% in the group of private social services.

Structural shifts in the US economy also took place in favor of business and professional services. In this sector for the period from 2012 to 2016, the largest increase in the structure of employment in the private sector of the economy was 0.5%, the positive structural shift in business services was 0.5% and second only to construction. In fact, business and professional services in the USA during the period under consideration were one of the leaders in growth (together with financial services and construction) in terms of the share in gross output and the leader in employment growth. The trend of growth of social services (development of human capital) and business services (development of a high-tech economy with significant assets in scientific, technical, information and communication activities) is clearly revealed in the US economy.

Trends in Kazakhstan.

In the domestic structure of GDP, the position of business and professional services is currently rather modest. According to their share in 2016, they are on the 8th place and this position has not changed since 2012. In Kazakhstan for the period from 2012 to 2016 there was a decrease in the share of professional and business services in GDP by 0.12% and an increase in employment in them by 0.4%. The share in the aggregate GVA is 4.7%, but there is a trend of growth in the specific weight by 0.6%. There is also a trend of growth in net profit for the household by 0.7%. The index of the physical volume of business and professional services amounted to 105.8%, which is slightly lower than the average for services - 108.3%. Drivers of growth of services in Kazakhstan are information and communication, art and entertainment, trade, accommodation and food services. The data of the comparative analysis for the USA and Kazakhstan are presented in Table 1.
Table 1. Comparative analysis of basic indicators of the development of business and professional services in the US and Kazakhstan economy

<table>
<thead>
<tr>
<th>Comparison parameters</th>
<th>USA* 2012-2016</th>
<th>Kazakhstan 2012-2016**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share in GDP for the last year of the period, %/ Ranking among all activities, place</td>
<td>11.1 / 3rd place</td>
<td>4.3 / 8th place</td>
</tr>
<tr>
<td>Structural shift in the share in GDP, %</td>
<td>0.5</td>
<td>-0.12</td>
</tr>
<tr>
<td>Share in employment for the last year of the period, %/ Ranking among all activities, place</td>
<td>13.4% / 3rd place</td>
<td>2.6% / 11th place</td>
</tr>
<tr>
<td>Structural shift in employment share, %</td>
<td>0.5</td>
<td>0.4</td>
</tr>
<tr>
<td>Index of physical volume for the period, % / Similar index for all services, %</td>
<td>112.5</td>
<td>105.8</td>
</tr>
<tr>
<td>Share in total GVA for household for the last year of the period, % / Structural shift, %</td>
<td>12.2 / 0.3</td>
<td>4.7 / 0.6</td>
</tr>
<tr>
<td>Share in total net profit for household for the last year of the period, % / Structural shift, %</td>
<td>7.6 / 0.1</td>
<td>3.6 / 0.7</td>
</tr>
</tbody>
</table>

* Data source https://www.bea.gov/national/index.htm
** Data source http://www.stat.gov.kz

Main indicators of dynamics and structure of post-industrial services in Kazakhstan for 2012-2016.

Based on the interpretation of post-industrial services, which we outlined in the theoretical chapter, we refer to this type of services a number of services, whose full name, according to the basic classifier adopted in Kazakhstan, is as follows:

- computer programming services, consulting and similar services;
- information services;
- legal and accounting services;
- services of parent companies; consulting services on management issues;
- services in the field of architecture, engineering surveys, technical testing and analysis;
- research and development services;
- services in the field of advertising and market research;
- professional, scientific and technical services (http://www.stat.gov.kz).

Based on the aggregate indicators of the index of the physical volume of services rendered, the share in the structure of the production volumes of the services sector and the average annual growth rate of the number of organizations, we provided a qualitative assessment of the development of each type of services and they are grouped according to the development trends. (Table 2)

Leadership sector includes scientific and technical services, consulting services on management issues, information services and computer programming services. They demonstrate a growing index of the physical volume above the average in the service sector and an increase in the share in the structure of the production volumes of services. The first two types of services are characterized by enlarging the volume of activity and eliminating noncompetitive organizations. The sector, which includes services in the field of architecture, engineering and technical testing and analysis, legal and accounting services is characterized by a high accumulated share of production in the services sector, stable production volumes, with no growth during the period under consideration, and some reduction in the structural share. The number of organizations also does not increase or decrease. In this regard, we described it as the “stability without growth”. The shrinking sector includes services in the field of advertising and market research; services in the field of advertising and market research; services in the field of advertising and market research; services in the field of advertising and market research; services in the field of advertising and market research; and professional, scientific and technical services. The aggregate of post-industrial services clearly shows the trend of decreasing the share of medium-sized enterprises in the production volumes in favor of either large or small firms. In the leadership group, a clear shift in favor of large enterprises with a decrease in the share of medium and small ones is observed in scientific and technical and information services. Obviously, for leaders, large forms...
are more competitive, because the type of activity is capital-intensive and such firms have greater opportunities. For other activities, as in legal and accounting services, optimization is in the direction of reducing the size.

Table 2. The main indicators of the development of post-industrial services, 2012-2016

<table>
<thead>
<tr>
<th>Types of services</th>
<th>Index of the physical volume of services rendered, %</th>
<th>Change in the share in the structure of the production volumes in the service industry, %</th>
<th>Average annual growth rate of the number of organizations, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership sector</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional, scientific and technical services</td>
<td>118.9</td>
<td>1.6</td>
<td>99</td>
</tr>
<tr>
<td>Consulting services on management issues</td>
<td>111</td>
<td>1</td>
<td>96</td>
</tr>
<tr>
<td>Information services</td>
<td>109.1</td>
<td>0.2</td>
<td>107</td>
</tr>
<tr>
<td>Computer programming services</td>
<td>107.2</td>
<td>0.4</td>
<td>109</td>
</tr>
<tr>
<td>The sector of organizations with a high accumulated structural share, but without dynamics (stability without growth)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Services in the field of architecture, engineering and technical testing, analysis</td>
<td>101.6</td>
<td>-3.1</td>
<td>100</td>
</tr>
<tr>
<td>Legal and accounting services</td>
<td>100</td>
<td>-0.5</td>
<td>100</td>
</tr>
<tr>
<td>Shrinking sector</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Services in the field of advertising and market research</td>
<td>98.5</td>
<td>-1.3</td>
<td>95</td>
</tr>
<tr>
<td>Research and development services</td>
<td>96.7</td>
<td>-0.8</td>
<td>97</td>
</tr>
</tbody>
</table>

Compiled by the author by the source http://www.stat.gov.kz

A characteristic feature of the post-industrial services sector in Kazakhstan is that the share of foreign ownership makes up a significant number - 27.2%, and in five types of services it is close to 30% or more.

In 2016, foreign ownership in the leading activities is most significantly represented in:
- professional, scientific and technical services - 28.0%;
- consulting services on management issues - 30.2%;
- computer programming services - 24.5%.

Industries with a high accumulated share in the services sector are also characterized by the active participation of foreign ownership in the production volumes:
- services in the field of architecture, engineering surveys, technical testing and analysis – 37%;
- legal and accounting services – 44.6%.

At the same time, on average in the service sector (except for education, health, social security and public administration), foreign ownership is 15.9% this year.

Characteristics of individual segments of post-industrial services and their types in 2016.

In computer services, 50% of the supply on the domestic market is occupied by services for developing application programs. As a result, the segment’s development trend can be recognized as intellectual, because this type of activity requires a high level of professional training and qualifications.

In the segment of information services, the leadership belongs to the service on the “provision of infrastructure for data and IT-technologies placement” (39.4%), which is not an intellectual trend in the development of information services; it is the exploitation of a variety of technical means for the production of information services. While the processing of sites in the Internet and the maintenance of the Internet portals can be considered services with a higher intellectual component, they grow more intensively than the segment as a whole, but the share of these services is still very small - 3.8% and 4.9%, respectively, although in five years they increased by 1% and 2.3%, respectively.
Management consulting in terms of production volumes ranks second in the group of post-industrial services after architectural, engineering and technical services both in 2012 and in 2016. The sector’s dynamics (142% of growth) is also one of the highest, for example, it exceeds the rapidly growing computer services (116% over the same period). At the same time, the growth rates of different types of services are significantly uneven. The growth leader is the services of logistics, chain stands and other managements, which currently occupy 48.9% of the market and grew by 1073% over the period. The second on demand are services of strategic management, production management, project management (except for construction projects). In the group of services with negative growth rates, marketing services, public relations services, and services for creating trademarks fell. In connection with the above-described trends, market diversification has declined; market concentration on logistics services and other management issues has increased. To maintain the share of its market niche, it was only possible to consult on strategic management issues, which takes 16.6% of the market in 2016, while in 2012 it was at the level of 17.1%.

Services in the field of architecture, engineering surveys, technical testing and analysis represent the most significant segment of the domestic market of post-industrial services. The dominant type of services in terms of their share in this segment are geological and geophysical services, which generally corresponds to the outstripping growth rates of the mining industry in Kazakhstan’s economy. This group includes services for exploration and evaluation of minerals, ground surveying services, mapping services. The second place in this market was occupied by architectural services of all kinds, which are the leader with growth rates of 82.5%, which is higher than in the whole segment (38.5%). The share of the market for this type of services was 27.9% in 2016, an increase of 6.8% as compared to 2012. Engineering services moved from the second to the third place, which is due to the sluggish development of the manufacturing industry in the country as a whole. In legal and accounting services, during the period under consideration, a permanent four is allocated: other legal services, civil law services, financial audit services, accounting services. These four positions, with some variation in specific gravity, retain their leadership in the market. There is practically no horizontal diversification of services in this segment of the market. In the field of scientific research and development, the leaders are natural sciences (the share is 52.8%) and developments in the field of techniques and technology, but incommensurably less - 9.5%. Absolute growth leaders are research and development in the field of nanotechnology and medicine, but their specific weights in 2016 are small (0.6% and 3.2%). Services in the field of advertising and market research reflect the crisis trends in the economy of Kazakhstan, when only basic advertising products are in demand, the share of which has decreased from 84.1% to 82.2%. At the same time, services for in-depth market research have grown to 1.9%. In the group of professional, scientific and technical services, services, which are not included in other groupings (47.9%) and scientific and technical consulting (40.5%), which is almost 4 times higher than the average segment, dominate.

Discussion

Evaluation of the development of the post-industrial services sector in Kazakhstan makes it possible to determine its role in the economy of the country as rather modest. In terms of share in GDP, the sector ranks 8th, having negative dynamics of the structural shift, over the past five years by 0.12 positions. On employment in the sector there is a positive structural shift of 0.4 positions at the 11th place in the 2016 ranking. The index of the physical volume has a lower value than the service sector as a whole. Positive trends are the growth of the share in the aggregate GVA (by 0.6%) and net profit for the household as a whole (by 0.7%).

Comparison with the values of similar indicators of the development of the post-industrial services sector in the United States makes it possible to estimate the distance between the most competitive developed countries that have middle and high-tech frames as a core of the economy, and Kazakhstan, which aspires to enter the top thirty of the developed countries in the world.

A positive sign of this movement is the presence of scientific and technical consulting, consulting on management issues, and computer programming services among the leaders of the sector of post-industrial services. The main food items, according to which the domestic supply in these markets is developing, can be recognized
as intellectual, requiring high professionalism and qualification. These services include the development of application programs in the computer services market; logistics services, strategic management services, production management services, project management in the market of management consulting; services of scientific and technical consulting in the domestic segment of professional and scientific and technical services.

The evidence that there is a strong competitive struggle in the markets is that medium-sized firms leave the market, growing to large (information, scientific and technical services) or optimizing to small (legal, accounting, advertising and market research services) in different segments of the market.

The most successful types of post-industrial services in their development are characterized by the significant participation of foreign ownership. In post-industrial services, foreign ownership is represented by a significant share - 27.2% against 15.9% on average in the sphere. The share of foreign ownership in the field of architecture, engineering and technical testing, analysis is 37% (while the share of this type of services is 39.8% of the total production volume in the post-industrial services sector in 2016); the share in management consulting is 30.2% (with the share in the sector of 13.8% and the second place in the importance of the type of activity). In general, this shows the main trend of the sector - the transfer of best practices and the desire to increase the competitiveness of domestic firms due to their localization in Kazakhstan.

Negative trends reflecting the problems of structural adjustment of the economy, or rather of its absence for the period from 2012 to 2016 include the following phenomena. The dominant activities in the services in the field of architecture, technical and engineering testing are geology and geophysics services (34.2% of the segment), which generally corresponds to the outstripping growth of the mining industry in Kazakhstan’s economy. This group includes services for exploration and evaluation of minerals, ground surveying services, mapping services. The absence of a pronounced dynamics in the development of manufacturing industry was reflected in the shift in engineering services from the second to the third place, and the technical tests and analysis for the fourth one. Now services of architecture of all kinds are ahead by the market share. The most negative trend is the reduction of all the basic indicators in research and development services and, in fact, the last place of this activity among all the post-industrial services.

Conclusions

The leading dynamics of the post-industrial services sector in the most competitive OECD countries (Switzerland, Great Britain, Austria, South Korea and others) is one of the characteristics of their economies, which determine not only the post-industrial quality of development, but also leadership in the world arena. An element-wise comparison of the main indicators of the dynamics and structure of the development of post-industrial services in the USA and Kazakhstan allows us to compare the role of business and professional services in the economies of these countries. If in the USA this group of services has the third place in terms of its share in GDP and its share in employment, i.e. along with the financial sector and industry it is the driver of the growth, in Kazakhstan this sector is on the second, and for some services on the third place.

The negative structural shift in the GDP of Kazakhstan in the business and professional services sector for the period from 2012 to 2016 indicates a relative shrinking in its development. Positive trends are an increase in its participation in the aggregate GVA and net profit for the household. This indicates complex and contradictory trends within the sector. Positive trends include a steady growth in the volume of computer programming services provided (in all regions) and management consulting services (in 10 out of 16 regions).

On the one hand, over the past five years, there has been an increase in the foreign presence in the provision of post-industrial services, the mastery of effective technologies and practices for their provision. Foreign participation is a significant factor in the development of architectural services, engineering surveys, technical testing and analysis, scientific and technical consulting, strategic management and logistics. The absence of a critical mass of structural restructuring of the economy as a whole, causes the dominance of services related to geological and geophysical research, while engineering surveys and technical tests have lost their positions in the last
five years. The most negative trend is the reduction of all the economic indicators of research and development services. Despite the presence of dynamics in the indicators of natural sciences, nanotechnology and medical research, their positions do not yet provide grounds for talking about a turning point in the scientific sphere and do not affect the main economic indicators. Thus, the main factors of the growth of the post-industrial services sector - the manufacturing industry and science - do not yet give grounds for talking about a directed movement toward the post-industrial economy. Factors of such movement should be structural reorganization and development of scientific research in the natural and technical fields.

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Board Diversity, Risk and Sustainability of Bank Performance: Evidence from India

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Abstract. This paper finds out the impact of a board diversity in terms of nationality and gender diversity on sustainability of bank performance and risk in Indian Banking and Financial Industry over the period of 2011 – 2015. Our results show that the presence of foreign directors is found to lead into a worse firm performance, but no significant relationship is found for the existence of women directors on bank performance. The nationality and gender diversity are found to have positive and significant impact to the bank risk. By looking at this, the regulation in India should pay more attention to the inclusion of foreign and women directors in their board as the improvement of corporate governance in emerging markets. Some contributions are made in this paper, which are first, this study gives new perspective in India as emerging market especially in financial industry, while most of the studies are conducted in U.S. and Europe. Most of the studies in India regarding the impact of board diversity to bank performance are conducted in all sectors, not specifically on the banking and financial industry and there is not any research which is conducted to find the impact on bank risk. However, some limitations are found. First, limited sample as it only covers 22 banks and financial industries due to lack of data on board diversities. Second, only 2 diversities are examined, while there are more diversities could be observed, such as age, education, experience.

Keywords: board diversity, nationality diversity, gender diversity, bank performance, bank risk, sustainability, India


JEL Classification: G30, G21, J16

1. Introduction

There have been wide-ranging discussions about the impact of a board diversity in terms of nationality, gender, age and tenure on firm performance and value, risk, and the corporate governance. Masulis et al. (2012) highlight the two essential roles of board directors: to recruit the managers, and to give suggestions to CEO regarding the firm’s plan. From the aforementioned types of a board’s diversities, this study will focus on both nationality and gender diversity in the banking industry. There are number of reasons why nationality diversity should be focused upon. First, as the board directors influence the firm operations, the nationality of the board directors may affect the interest of the shareholder and the value of the decision made by foreign independent directors (FIDs) which result in the overall performance of the firm (Estélyi et al., 2016). Second, as mentioned by Estélyi et al. (2016), there are only a few studies regarding the nationality diversity on board directors (Ma-
The first concern in this study is to find out the impact of the nationality and gender diversity to the firm’s performance in an accounting-based measurement that reflects the profitability of the companies. Previous literatures capture both positive and negative impacts of having foreign independent directors (FIDs) and female directors to the firm success. FIDs provide more knowledge about global business resulting in better performance of the company; however, it also causes additional cost and time since they have difficulties to do on-site visit (Masulis et al., 2012). In the banking industry, existing studies draw attention to the negative impacts of the presence of foreign directors to the banking accomplishment in Europe, Turkey and Indonesia (Garcia-Meca et al., 2015; Kilic, 2015; Setiyono and Tarazi, 2014). In contrast, there are mixed findings in the studies relating to the inclusion of female directors. Kilic (2015) finds a negative relationship between this and the performance of the banking industry in Turkey. Setiyono and Tarazi (2014) show a positive relationship in Indonesia. Wachudi and Mboya (2012) show no relationship in Kenya.

Furthermore, this study is focused on the effect of nationality and gender diversity to the firm’s risk taking. Local firms in countries with high level of risk takers tend to take more risks, specifically in sectors with vague information such as finance (Mihet, 2012). The presence of foreign directors is found to increase the firm’s risk in Indonesian banking industry (Setiyono and Tarazi, 2014). For the gender diversity, earlier studies find mixed results on the existence of female directors to the risk taking. The positive relationship is found due to the lack of experience by women directors in German banking sector (Berger et al., 2014). In contrast, as most of women are risk averse, they tend to take less risk to avoid failure (Barber and Odean, 2001; Jianakoplos and Bernasek, 1998; Mateos de Cabo et al., 2012). The aim of this study is to measure the impact of board diversity in terms of nationality and gender on bank performance and risk in India. India is chosen to be the subject of this study for three reasons. First, different from other emerging markets, India have actively participated in stock markets since 1875 even with limited practice of corporate governance (Jindal and Jaiswall, 2015). Second, Clause 149 was introduced in India to regulate the corporate governance of listed firms. One of the enactment of Clause 149 states that the listed companies in India have to present at least one female director in their board composition. Third, it is interesting to examine how the board diversity in India affects the bank performance and risk taking as it is the second largest populated country in the world. This study makes four contributions to the existing literature. First, previous researches in this topic are mainly completed in Europe and the U.S.; thus, this research will give new perspective of how board diversity affects the bank performance and risk in emerging market: India. Second, most researches are mainly conducted in all firms excluding the financial ones; therefore, this study will provide new insights how it impacts on financial companies. Financial firms have a unique characteristic as a financial intermediary institution and external sources of financing for...
other firms (Włodarczyk et al., 2018). Banks play important role in a country’s economy especially in emerging economies (Trinugroho et al., 2014; Jurevičienė and Skvarciany, 2016). Third, to our knowledge, there are not a lot of researches conducted in the impact of board diversity to the bank performance in the India as most of the existing studies are conducted in all sectors, not specifically on banking and financial sectors. Last, most of the studies in India examine the relation between board diversity and performance. However, there has been no research conducted to see the effect this has on risk, therefore, this study will contribute to this point.

2. Literature Review

2.1 Theoretical Framework

Previous researches on corporate governance that relates to the board diversity are built on some theories: agency theory, power, and resource dependent. Agency theory describes the relationship between the principals (shareholders) and the agents (managers). The problem arises when the interest of shareholders is not aligned with the interest of managers (agency problems). Jensen and Meckling (1976) describe that board of directors acts to ensure that the actions taken by managers are in line with the shareholders’ interest; thus, agency problems can be prevented. There are mixed findings on the effect of board diversity on this. Foreign boards may understand the complexity of a situation in a business and thus may give indications to the investors and firm (Goodstein et al., 1994; Wiersema and Bantel, 1992). Estélyi, et al. (2016) add to this by saying that more diverse directors offer various knowledge, skill and perception in how to deal with new investments. The value of the decisions taken by the diverse board is also considered to be higher and more ground-breaking (Maznevski, 1994). However, there are some drawbacks in having FIDs on a firm. Masulis et al. (2012) find that the performance of the company gets worse at the absence of the business from the FIDs home countries. Miletkov et al. (2014) also show that the firm’s performance is worse when the foreign boards are located in the countries with the top level in legal. One of the governance mechanisms to overcome agency problems is the board directors and compensation: One way for principals to obtain more information about the company is by increasing the compensation of the CEOs to make them feel that they have the ownership over the firm (Davis, J.H. et al., 1997). One theory relating to this compensation is power theory which means maximising the CEOs’ salary so that they use their power to make impact on executive compensation. Resource dependent theory states that board directors are resources that may affect the actions taken by the company (Johnson et al., 1996; Hillman et al., 2000). Board directors are seen as (1) the resource to the environment, (2) external resources, and (3) financial resources that may maximise firm value. As the first point, Lynall et al. (2003) see board directors’ actions as resources that decrease the environmental ambiguity and diminish operation expenses related to the environmental independency by relating the firm to the outside environment. Later, as the second point, board directors are considered to provide knowledge, skills, ideas, and links to key constituencies (Hillman et al., 2000). As the last point, they also bring financial resources to the firm. There is a tendency of the firm with financial problems to assign the boards from financial institutions that will build new chance for them from having collaboration in the future (Mizruchi, et al., 1988).

Overall, these theories conclude that the election of board directors is vital due to their role in making sure that the objectives between managers and shareholders are aligned, therefore they can avoid the agency problems. The agency problems can be mitigated by the compensation to the executives to create the sense of ownership to the corporation. Furthermore, board directors are seen as the resources to the decisions taken by the company that will influence the investors’ perspective to the firms. The way investors see the company will affect their decision to invest in the future that will certainly impact the enterprise value.

2.2 Effects of Board Diversity on Bank Performance

There are mixed findings regarding the impact of nationality diversity on the firm performance. Having foreign directors may add value to the firm (Oxelheim and Randøy, 2003). Masulis et al. (2012) show that having foreign directors will enlarge the quality of the firm through their information and recommendations in the international industry. Hence, it will open the opportunity for the firm to expand their business to a global level.
(Adams, et al., 2010). Not only to enlarge its markets, the firm may also invite new investors as FIDs provide innovative thinking and capability to the firm (Garcia-Meca et al., 2015). However, there are some negative impacts by employing FIDs. The distance is the first problem that comes up where they get difficulties to do on-site visit and to come to meetings (Masulis et al., 2012). This problem relates to the inability of FIDs to obtain the latest information about the firm operations (Masulis et al., 2012). Forbes and Miliken (1999) consider communication as one of the problems faced by FIDs which can result in conflicts among members of the firm. This finding is strengthen by Ruigrok, W. et al. (2007) discovering that nationality-diverse boards are likely to be correlated with conflicts and misunderstandings. There has been a wide-ranging discussions regarding the impact of gender diversity to the firm performance. Using the measurement of ROA and ROI, Erhardt, Werbel, and Shrader (2003) find that the presence of gender diversity on board leads to a better corporate’s performance. In contrast, Adams and Ferreira (2009) find a negative relationship between gender board diversity on a firm’s performance, even though women boards are found to extract more monitoring. Specifically in developing countries, Kusumastuti et al. (2007) find that there is no significant impact caused by the female board directors to the firm’s performance in Indonesia measured by Tobin’s Q. However, Darmadi (2011) find that there is a negative relationship between the presence of women directors to the firm performance in Indonesia in the measure of ROA and Tobin’s Q. In Thailand’s firms, Sitthipongpanich and Polsiri (2013) find that there is no significant relationship between gender diversity and the firm’s value. Similarly, in Malaysian companies, Marimuthu and Kolandaisamy (2009) also find that there is no significant impact of gender diversity to the firm financial performance.

However, those results may not be representative of the impact on banking industries because of the concerns stated previously in the introduction. Garcia-Meca et al. (2015) explains that nationality diversity of the board directors prevent the financial performance of European banking industries. While in the case of emerging markets, Kilic, M. (2015) find that the presence of nationality diversity of board directors in Turkey leads to worse banking performance. In the case of Indonesia, Setiyono and Tarazi (2014) find that there is negative relationship between nationality diversity of board directors to the performance of banks in Indonesia. Regarding the gender diversity, Kilic (2015) finds that the presence of gender diversity of board directors in Turkey leads to worse banking performance. In contrast, Setiyono and Tarazi (2014) find that there is positive relationship between gender diversity of board directors to the performance of bank in Indonesia. While in the case of Kenya, it is found that there is no significant relationship between gender diversity on board directors to the performance of bank (Wachudi and Mboya, 2012). On the whole, the existing literatures show mixed results of foreign directors to the firm’s performance; however, most studies on the developed and developing countries (European countries, Indonesia, and Turkey) present the negative impact of the inclusion of FIDs. The negative impact presented in the emerging markets may be triggered by their unpreparedness (such as language and culture), which can also happen in India as a developing country. Therefore, the hypothesis regarding nationality diversity can be formulized as follows:

**H1 : There is a negative relationship between the presence of nationality diversity and bank performance in India**

Regarding the gender diversity, the previous studies present both positive and negative impacts on the firm performance. Nevertheless, most studies argue that women directors are found to be more risk averse and less confident than male ones, leading them to make low-risk decisions. As the low risk decision is in line with low return, it may lead the company to be less attractive to the investors. Hence, the second hypothesis is formulated as follows:

**H2 : There is negative relationship between the presence of gender diversity and bank performance in India**

### 2.3 Effects of Board Diversity on Bank Risk

There is still a lack of studies highlighting the effect of nationality diversity of board directors to the bank risk. Setiyono and Tarazi (2014) stating that the presence of FIDs in Indonesia banking sector increases the risk. Mihet (2012) examines the impact of culture to the risk taking and finds that local companies in countries with low level of ambiguity aversion tend to take more risk, especially in those sectors where the information are
vague such as finance. Tse et al. (1998) also find that the culture of home country affects the way managers make decision. Later, Graham et al. (2010) show that ambiguity aversion as the cultural value influences the executives’ decision making. Even though these previous studies are not conducted directly to examine the impact of nationality diversities of a board to the risk taking by firm, it may represent that the culture of the boards may affect the way they make decision in terms of risk. Gender diversity is measured by the presentation of women in board directors. Jianakoplos and Bernasek (1998) explain that as the level of risk aversion by women is higher than men, it may lead to the worse firm performance since the lower risk, the lower return that might be gained. In contrast, Berger et al. (2014) who focus on managers rather than non-executives directors find that as the number of women boards increases, the portfolio risk of the Germany banks also increases due to the less experience women have compared to male boards. In the field of banking and financial industries, Setiyono and Tarazi (2014) stating that the presence of FIDs in Indonesia banking sector increase the risk. Regarding the gender diversity, Berger et al. (2014) who focus on managers rather than non-executives directors find that as the number of women boards increases, the portfolio risk of the Germany banks also increases due to the less experience women have compared to male boards. To conclude, there is still lack of observations regarding the impact of nationality diversity to the firm’s risk. Nonetheless, most studies show that the culture of their home country influences their risk tolerance in making decisions. The presence of nationality diversity indicates that the more cultures are found in a company, the more people may tolerate to others. By having higher tolerance to other cultures, the company might take more risk. Therefore, the hypothesis regarding the impact of nationality diversity to the firm’s risk can be formulated as follows:

**H3 : There is positive relationship between the presence of nationality diversity to the risk taking in Indian banking industry**

Literatures on gender diversity indicate mixed impact to the firm’s risk. However, most studies present the negative effects of the existence of women directors to the firm’s risk due to their characteristic as the risk averse. This negative relationship is also confirmed by the literature on non-financial enterprises and emerging markets, that might happen in India as one of the developing countries. Thus, the last hypothesis regarding the impact of gender diversity to risk taking is formulated as follows:

**H4 : There is negative relationship between the presence of gender diversity to the risk taking in Indian banking industry.**

3. Data And Methodology

3.1 Data

Financial firms in India will be the subject of this analysis and the data will be obtained mainly from Bankscope, Annual Reports and Spencer Stuart. Spencer Stuart provides the data of board index for some countries, including India. As the data of board profiles in Spencer Stuart are limited, the data in this study are restricted to the data of financial firms presented in Spencer Stuart, comprising of 22 state banks and financial institutions. Further, this study will cover the period of 2011 – 2015 and a total of 110 observations. The data of the firm’s performance and risk are obtained from Bankscope and calculated manually based on the formula presented in Table 1. When the data are missing from Bankscope, they are retrieved from the annual report of the banks and financial institutions.

3.2 Methodology

The objectives of this study are to examine the impact of nationality and gender diversity to the performance and risk taking on the Indian Banking and Financial Industry. Therefore, there will be two regression equations to be conducted in this research.
3.2.1 Impact of Board Diversity on Firm Performance

There are 2 proxies to find the effect of board diversity on the firm’s performance. Following the proxies used by Estélyi et al. (2016), Kilic, M. (2015), Nys et al. (2015) and Setiyono and Tarazi (2014), the first one is Return on Assets (ROA) and the second is Return on Equity (ROE) to examine the accounting profitability. ROA and ROE are defined as the dependent variables and board diversities that consist of nationality diversity and gender diversity are defined as the independent variables. The equations for Firm’s ROA and Firm’s ROE are followed:

\[
\text{Firm’s ROA} = \beta_0 + \beta_1 \text{board diversity} + \beta_2 \text{control variables} + \epsilon \\
\text{Firm’s ROE} = \beta_0 + \beta_1 \text{board diversity} + \beta_2 \text{control variables} + \epsilon
\]

3.2.2 Impact of Board’s Diversity on Firm’s Risk

There are 4 proxies to determine the impact of the board’s diversity to the bank’s risk. Following the studies by Mihet, R. (2012) and Setiyono, B. and Tarazi, A. (2014), Trinugroho et al. (2017) the proxies used to examine the impact of board’s diversity on risk by measuring standard deviation of ROA, standard deviation of ROE and Z-Score. Standard deviation of ROA (SDROA) and standard deviation of ROE (SDROE) represent the risk taken by a firm based on the variability of the firm’s income. The volatility of ROA represents various kinds of risks, such as liquidity, leverage, and interest rate risk. The studies by Setiyono, B. and Tarazi, A. (2014) show that in measuring the standard deviation of ROA, ROA from the last three years is used as the calculation. However, in this study the standard deviation of ROA based on the ROA on the last four years is computed as it might not have any change in the last three years. The same method is also applied to the standard deviation of ROE. After standard deviation of ROA and ROE, later Z-Score is used to reflects the insolvency risk (Laeven and Levine 2009; Kanagaretnam et al. 2011). The higher the Z-Score means the better and the more steady the financial condition the company has (Mihet, R., 2012) because it represents the number of standard deviation that the company’s losses might rise and lead the firm into bankruptcy since the number of capital decreases (De Nicolò, 2000). There are 2 ways to calculate the Z-Score: the first one is Z-Score (ZSA) to measure the asset’s risks and Z-Score (ZSL) to measure the leverage risk. Further, SDROA, SDROE, ZSA and ZSL are defined as the dependent variables, while the independent variables and control variables are same as the measurement for the firm’s performance. The equations for measuring the company’s risk are as follows:

\[
\text{Firm’s SDROA} = \beta_0 + \beta_1 \text{board diversity} + \beta_2 \text{control variables} + \epsilon \\
\text{Firm’s SDROE} = \beta_0 + \beta_1 \text{board diversity} + \beta_2 \text{control variables} + \epsilon \\
\text{Firm’s ZSA} = \beta_0 + \beta_1 \text{board diversity} + \beta_2 \text{control variables} + \epsilon \\
\text{Firm’s ZSL} = \beta_0 + \beta_1 \text{board diversity} + \beta_2 \text{control variables} + \epsilon
\]

3.2.3 Control Variables

Four control variables are applied as they may affect the performance and risk of the bank based on previous studies. Following the research by El Mehdi (2007), the firm size is expected to affect the performance of the firm. As the size of the bank becomes larger, it may reduce the bank’s risk since they might a a better portfolio diversification. De Nicolò (2000) also explains that a bank may get an advantage of Too-Big-To-Fail as the bank size increases. The board size is also expected to affect the performance of the bank (de Andrés and Valelado, 2008). As the board size becomes smaller, this will allow the executives to stand for higher risks; therefore, the risk gets higher when the board is smaller (Wang, 2012). Ararat et al. (2010) also considers that board independence may affect the performance of a firm. Ashbaugh-Skaife et al. (2006) find that the systematic risk and idiosyncratic risk decrease due to the presence of independence board directors. In the banking sector, some studies (Mishra and Nielsen, 2000; Cornett et al., 2009) show that independent boards are essential for banking since it may help to develop income quality and compensation to the CEOs. Last, is the loan ratio. Lin and Zhang (2009) show that a loan ratio represents a bank’s plan on intermediation actions. Banks which obtain low loan ratio may obtain diversification advantage (De Young and Roland, 2011) while banks with high loan ratio are more open to credit risks; therefore, they obtain higher risk. These dependent, independent, and control variables for the impact of board’s diversity on a firm’s performance and risk are summarized in Table 1.
Table 1. Definitions and Sources for the Variables Used

<table>
<thead>
<tr>
<th>Definitions / Calculations</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
</tr>
<tr>
<td>ROA Net Income / Total Assets</td>
<td>Bankscope / Annual Report</td>
</tr>
<tr>
<td>ROE Net Income / Total Equity</td>
<td>Bankscope / Annual Report</td>
</tr>
<tr>
<td>SDROA Standard Deviation of ROA</td>
<td>Bankscope / Annual Report</td>
</tr>
<tr>
<td>SDROE Standard Deviation of ROE</td>
<td>Bankscope / Annual Report</td>
</tr>
<tr>
<td>ZSA ROA divided by SDROA</td>
<td>Bankscope / Annual Report</td>
</tr>
<tr>
<td>ZSL EA (EA=Equity/Total Assets) divided by SDROA</td>
<td>Bankscope / Annual Report</td>
</tr>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
</tr>
<tr>
<td>Nationality FID Indicator (1 if company has foreign directors, 0 otherwise)</td>
<td>Spencer Stuart</td>
</tr>
<tr>
<td>Gender Diversity Total number of female directors divided by total number of board directors</td>
<td>Spencer Stuart</td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
</tr>
<tr>
<td>Firm Size Logarithm of Total Assets</td>
<td>Bankscope / Annual Report</td>
</tr>
<tr>
<td>Board Size Logarithm of total number of board directors</td>
<td>Spencer Stuart</td>
</tr>
<tr>
<td>Board Independent Total number of board independence divided by total number of board directors</td>
<td>Spencer Stuart</td>
</tr>
<tr>
<td>Loan Ratio Loan divided by total assets ratio</td>
<td>Bankscope / Annual Report</td>
</tr>
</tbody>
</table>

4. Empirical Results And Discussions

4.1 Descriptive Statistics

Table 2 presents the descriptive statistics for the variables in the study. Panel B describes the board diversity measurement, which are nationality and gender diversity. The average percentage of foreign directors in Indian banking industry is 0.036 which is lower compared to previous studies which are conducted in developed countries (Masulis et al., 2012; Garcia-Meca et al., 2015; Estélyi, et al, 2016) and in emerging markets (Darmadi, 2011; Kilic, 2015). It indicates that from 22 banks in the sample, 3.63% have one or more foreign directors in Indian banking industry. Meanwhile, the gender diversity is 0.071, which is lower compared to earlier researches in developed countries by Garcia-Meca et al. (2015) and Estélyi, et al (2016) and Darmadi (2011) and Kilic (2015) in developing countries. It shows that the average percentage of female directors in Indian banking industry is 7.1%. It can be seen that the diversity in gender is higher compared to the existence of foreign directors due to the implementation of Clause 149 in Companies Act 2013 that requires companies in India to involve at least one woman in their boards. These results indicate that the board diversity in India in terms of nationality and gender are still low compared to other developing countries such as Indonesia (Darmadi, 2011) and Turkey (Kilic, 2015).

Table 2. Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel A. Firm Performance and Risk</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>110</td>
<td>0.016</td>
<td>0.015</td>
<td>0.009</td>
<td>0.003</td>
<td>0.038</td>
</tr>
<tr>
<td>ROE</td>
<td>110</td>
<td>0.151</td>
<td>0.155</td>
<td>0.046</td>
<td>0.037</td>
<td>0.249</td>
</tr>
<tr>
<td>Standard Deviation of ROA</td>
<td>110</td>
<td>0.002</td>
<td>0.002</td>
<td>0.002</td>
<td>0.000</td>
<td>0.019</td>
</tr>
<tr>
<td>Standard Deviation of ROE</td>
<td>110</td>
<td>0.021</td>
<td>0.018</td>
<td>0.012</td>
<td>0.005</td>
<td>0.070</td>
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<tr>
<td>ZSA</td>
<td>110</td>
<td>10.373</td>
<td>8.307</td>
<td>7.191</td>
<td>0.498</td>
<td>35.137</td>
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<tr>
<td>ZSL</td>
<td>110</td>
<td>66.945</td>
<td>56.843</td>
<td>41.015</td>
<td>13.383</td>
<td>246.324</td>
</tr>
<tr>
<td><strong>Panel B. Board Diversity Measurement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nationality Diversity</td>
<td>110</td>
<td>0.036</td>
<td>0.000</td>
<td>0.188</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Gender Diversity</td>
<td>110</td>
<td>0.071</td>
<td>0.074</td>
<td>0.068</td>
<td>0.000</td>
<td>0.250</td>
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</tbody>
</table>

Panel C. Control Variables

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm Size</td>
<td>110</td>
<td>23.973</td>
<td>24.141</td>
<td>1.208</td>
<td>20.969</td>
<td>26.727</td>
</tr>
<tr>
<td>Loan Ratio</td>
<td>110</td>
<td>0.892</td>
<td>0.908</td>
<td>0.056</td>
<td>0.663</td>
<td>0.950</td>
</tr>
<tr>
<td>Board Size</td>
<td>110</td>
<td>2.286</td>
<td>2.303</td>
<td>0.303</td>
<td>1.099</td>
<td>2.773</td>
</tr>
<tr>
<td>Board Independent</td>
<td>110</td>
<td>0.595</td>
<td>0.577</td>
<td>0.121</td>
<td>0.000</td>
<td>0.833</td>
</tr>
</tbody>
</table>
4.2. Multivariate Analysis

4.2.1 Impact of Board Diversity on Bank Performance

In generating the regression, this study uses the pooled panel since the data consist of cross-section and time series. Table 3 reports the regression of pooled panel for measuring the impact of the board diversity in terms of nationality and gender diversity to the firm’s performance (ROA and ROE). It is clearly seen that the nationality diversity has significant and negative relationship with the bank performance in terms of both ROA and ROE. It indicates that if the number of foreign directors increases, the firm’s performance worsens. This result is in line with the previous studies conducted by Masulis et al. (2012), Forbes and Miliken (1999) and Ruigrok, W. et al. (2007) which show that the presence of foreign directors leads to worse performance due to the distance problem, inability to obtain latest information, and communication problems that might result in conflicts. It is also in line with the researches that are conducted in banking industries: Garcia-Meca et al. (2015) in European banking industries, Kilic (2015) in Turkey, Setiyono and Tarazi (2014) in Indonesia. Second, the impact of gender diversity is calculated using the number of female directors divided by the total number of board directors. The results show that there is no significant impact of the presence of female directors to the company’s performance in the proxies of ROA and ROE. These are in line with the studies by Terjesen and Singh (2008) that explains female directors have little influence to the firm performance. Again, regulation of Clause 149 that requires firms in India to appoint at least one woman in their boards mentioned in section 2.5 might be the cause why banks in India appoint women. These are also in accordance to the previous studies conducted in emerging markets by Kusumastuti et al. (2007) in Indonesia, Marimuthi, M. & Kolandaisamy, I. (2009) in Malaysia, and Sitthipongpanich, T. & Polsiri, P, 2013 in Thailand, in measuring the impact to the firm’s value.

Table 3. Regression Result for Firm’s Performance

<table>
<thead>
<tr>
<th>Variable</th>
<th>ROA</th>
<th>ROA</th>
<th>ROE</th>
<th>ROE</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.142***</td>
<td>0.135***</td>
<td>0.424***</td>
<td>0.366**</td>
</tr>
<tr>
<td>Firm Size</td>
<td>-0.003***</td>
<td>-0.002***</td>
<td>-0.027***</td>
<td>-0.023***</td>
</tr>
<tr>
<td>Loan Ratio</td>
<td>-0.064***</td>
<td>-0.076***</td>
<td>0.396***</td>
<td>0.334**</td>
</tr>
<tr>
<td>Board Size</td>
<td>0.001</td>
<td>0.003</td>
<td>0.007</td>
<td>0.015</td>
</tr>
<tr>
<td>Board Independent</td>
<td>0.000</td>
<td>-0.002</td>
<td>0.027</td>
<td>0.014</td>
</tr>
<tr>
<td>Nationality Diversity</td>
<td>-0.007***</td>
<td>-0.034*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender Diversity</td>
<td>-0.007</td>
<td>-1.246</td>
<td>-0.079</td>
<td>-1.571</td>
</tr>
<tr>
<td>Obs.</td>
<td>110</td>
<td>110</td>
<td>110</td>
<td>110</td>
</tr>
<tr>
<td>F-Statistics</td>
<td>10.944</td>
<td>8.549</td>
<td>4.520</td>
<td>4.273</td>
</tr>
<tr>
<td>R2</td>
<td>0.345</td>
<td>0.291</td>
<td>0.179</td>
<td>0.170</td>
</tr>
<tr>
<td>Adj. R2</td>
<td>0.313</td>
<td>0.257</td>
<td>0.139</td>
<td>0.131</td>
</tr>
</tbody>
</table>
4.2.2 Impact of Board Diversity on Bank Risk

The results show that there is positive and significant impact of the occurrence of foreign board directors to the risk taking in Indian banking industries in the measurement of ZSA and ZSL. These results are in line with previous studies conducted by Setiyono and Tarazi (2014) who find that the presence of foreign directors lead to a higher risk taking. The firm’s size shows that there is positive and significant impact in the case of SDROE and ZSL, indicating that as the firm size in getting larger, they may take more risks. This might be due to their ability in generating more profits therefore having the courage to take more risks.

Second, in the measurement of gender diversity, the results show that only ZSA has positive and significant impact (at 10% significance level) of the existence of women directors to the risk taking. The result might be caused by the lack of experience female directors have, supported by the fact of Clause 149 that require at least one woman to sit in board of directors. This result shows contrary findings compared to the previous studies (Barber and Odean, 2001; Jianakoplos and Bernasek, 1998; Mateos de Cabo et. al, 2012; Setiyono and Tarazi 2014) which find a negative relationship.

Table 4. Regression Result for Firm Risk of 4 years behind

<table>
<thead>
<tr>
<th>Variables</th>
<th>SDROA</th>
<th>SDROA</th>
<th>SDROE</th>
<th>SDROE</th>
<th>ZSA</th>
<th>ZSA</th>
<th>ZSL</th>
<th>ZSL</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.030</td>
<td>0.032</td>
<td>-0.291**</td>
<td>-0.262</td>
<td>-8.764</td>
<td>1.122</td>
<td>-532.162</td>
<td>-455.574</td>
</tr>
<tr>
<td>(1.368)</td>
<td>(1.381)</td>
<td>(-2.075)</td>
<td>(-1.776)</td>
<td>(-0.407)</td>
<td>(0.050)</td>
<td>(-1.275)</td>
<td>(-1.022)</td>
<td></td>
</tr>
<tr>
<td>Firm Size</td>
<td>-0.002***</td>
<td>-0.002***</td>
<td>0.012***</td>
<td>0.011**</td>
<td>0.662</td>
<td>-0.084</td>
<td>41.356***</td>
<td>35.102***</td>
</tr>
<tr>
<td>(3.605)</td>
<td>(3.378)</td>
<td>(3.091)</td>
<td>(2.539)</td>
<td>(0.647)</td>
<td>(-0.079)</td>
<td>(3.568)</td>
<td>(2.680)</td>
<td></td>
</tr>
<tr>
<td>Loan Ratio</td>
<td>0.029</td>
<td>0.029*</td>
<td>0.031</td>
<td>0.025</td>
<td>-3.164</td>
<td>7.250</td>
<td>-536.363</td>
<td>-442.250</td>
</tr>
<tr>
<td>(1.659)</td>
<td>(1.709)</td>
<td>(0.281)</td>
<td>(0.224)</td>
<td>(-0.137)</td>
<td>(0.314)</td>
<td>(-1.614)</td>
<td>(-1.329)</td>
<td></td>
</tr>
<tr>
<td>Board Size</td>
<td>0.000</td>
<td>0.000</td>
<td>-0.007</td>
<td>-0.007</td>
<td>0.392</td>
<td>-1.328</td>
<td>31.251</td>
<td>22.200</td>
</tr>
<tr>
<td>(0.045)</td>
<td>(-0.005)</td>
<td>(-0.869)</td>
<td>(-0.862)</td>
<td>(0.129)</td>
<td>(-0.436)</td>
<td>(1.273)</td>
<td>(0.904)</td>
<td></td>
</tr>
<tr>
<td>Board Independent</td>
<td>-0.002</td>
<td>-0.002</td>
<td>0.019</td>
<td>0.020</td>
<td>8.260</td>
<td>11.140*</td>
<td>22.235</td>
<td>35.311</td>
</tr>
<tr>
<td>(-0.818)</td>
<td>(-0.745)</td>
<td>(1.405)</td>
<td>(1.462)</td>
<td>(1.604)</td>
<td>(1.859)</td>
<td>(0.555)</td>
<td>(0.861)</td>
<td></td>
</tr>
<tr>
<td>Nationality Diversity</td>
<td>0.000</td>
<td>-0.002</td>
<td>7.873**</td>
<td>40.136*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0.191)</td>
<td>(-0.293)</td>
<td>(2.241)</td>
<td>(1.803)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender Diversity</td>
<td>0.001</td>
<td>0.013</td>
<td>16.851*</td>
<td>53.256</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0.282)</td>
<td>(0.591)</td>
<td>(1.742)</td>
<td>(0.808)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obs.</td>
<td>110</td>
<td>110</td>
<td>110</td>
<td>110</td>
<td>110</td>
<td>110</td>
<td>110</td>
<td>110</td>
</tr>
<tr>
<td>R2</td>
<td>0.676</td>
<td>0.676</td>
<td>0.423</td>
<td>0.425</td>
<td>0.070</td>
<td>0.055</td>
<td>0.582</td>
<td>0.569</td>
</tr>
<tr>
<td>Adjusted R2</td>
<td>0.575</td>
<td>0.575</td>
<td>0.243</td>
<td>0.245</td>
<td>0.026</td>
<td>0.009</td>
<td>0.451</td>
<td>0.434</td>
</tr>
</tbody>
</table>
4.3. Robustness Checks

To check the robustness, we apply some models: (1) using alternative measurements of the bank performance (NIM and OEOI), (2) excluding the control variables, (3) using 2 periods in measuring the bank risk. Following the study of Setiyono and Tarazi (2014) who applied Net Interest Margin (NIM) and Ratio of Operating Expense to Operating Income (OEOI) as the alternative measurements for a bank performance. It is mentioned that both ratios have been regularly applied to estimate the performance of a bank (Setiyono and Tarazi, 2014). The results explain that the presence of foreign board directors lead to a lower performance of the company in a significant level of 1% with respect to NIM. This result is in line with the measurement of the firm’s performance using both ROA and ROE presented in table 3. When measuring the performance of the financial institution using ROA and ROE, there is no significant impact of the existence of women directors; however, by using the alternative measure of OEOI, the result indicates that the female who sit in the board of directors are found to increase the performance of banking in India but only in the significance of 10%. This result is in line with the previous research conducted by Erhardt et al. (2003). The positive relationship between the firm’s performance and gender diversity may be generated by the action of female directors who do more monitoring to the operation of the firm compared to the male ones. In addition, the regression is done by excluding all of the control variables (firm size, loan ratio, board size, and board independent) to check whether the results presented in table 3 and 4 are caused by endogeneity. After excluding all of the control variables, the results show that both nationality and gender diversity are significant and have a negative relationship with regard to the ROA and ROE. Compared to the findings on table 3 which measure the impact of the board’s diversity to the company’s performance by including the control variables, it is clearly seen that nationality diversity performs the same result, indicating that the result in this variable is not triggered by endogeneity. In contrast, the outcome on gender diversity is different from the previous result in table 5; thus, it can be concluded that this variable is affected by endogeneity. While in the case of bank risk, the result shows that nationality diversity has positive relationship with risk taking in the case of ZSA and gender diversity has positive and significant relationship with the risk in the measurement of ZSL. These results are in line with the results in table 4 when control variables are included. Therefore, it can be concluded that those variables are not affected by endogeneity. Last method is by calculating the standard deviation of ROA and ROE based on two periods: the first 3 years (2010-2012) and the second 3 years (2013-2015). The results on the first 3 years indicate that there is no significant impact of both nationality and gender diversity to the risk taking in the Indian banking industry. While the results on the second 3 years show that the nationality diversity is found to have a mixed impact on companies’ risk taking. In the measurement of ZSA and ZSL, it is found to have positive relationship, while SDROA shows a negative relationship among them. While, the existence of women directors is found to lead the company to take less risks. This result is in line with the previous studies conducted by Barber and Odean, (2001); Jianakoplos and Bernasek, (1998); Mateos de Cabo et. al, (2012) and Setiyono and Tarazi (2014). The negative relationship might be due to the characteristics of women as risk-averse, therefore having the tendency to take less risk to avoid failure.

Conclusion

This study focuses on 2 diversities: nationality and gender diversity which focuses on 22 banks and financial institutions in India from the period of 2011 – 2015, resulting in a total of 110. The presence of foreign directors are found to lead the company into worse performance which might be caused by the difficulties in doing the regular checking and the communication problems as the previous studies conducted by Masulis et al. (2012) and Forbes and Miliken (1999). While the existence of female directors is found to have no impact on the company’s performance. This result might be explained by the fact that the inclusion of women directors is only to follow the regulation of Clause 149 in India that requires Indian firms to place at least one woman in their boards. The next concern in this study is to look for the effect of board diversities to the firm risks. The results show that the presence of both foreign directors and female board directors lead to a higher risk taking. The result on the impact of gender diversity to the firm risk is quite surprising as most of the previous studies found negative relationship among them. This might be due to the lack of experience of women as board directors that might result in a higher risk taking. Further, the outcomes of the robustness testing done indicate a consistent result of the negative effect of nationality diversity to the firm’s performance whereas the gender diversity shows mixed impact on firm
performance. In relation to the firm risk, by excluding the control variables and applying 2 period of times, there are varied results regarding the presence of FIDs and the inclusion of women directors. Overall, the results on the main regression and robustness testing indicate that both nationality and gender diversity play an important role to the performance and risk taking of the banking industry, supporting the findings of Setiyono and Tarazi (2014) and Claessens and Yortuglo (2013). By looking at this, the regulation in India should pay more attention to the inclusion of foreign and women directors in their board as the improvement of corporate governance in developing countries. There are some limitations in this study. First is the limited sample, as it only covers 22 banks and financial industries from the period 2011 – 2015 due to a lack of data on board profiles. Therefore, this study might not berepresentative for the financial institution in India. The other is that it only covers two kinds of board diversities: nationality and gender diversity while in fact there are still a lot of other diversities that could be observed, for instance age, education, experience, etc. Based on these constraints, future researches can be done to examine the impact of board diversities by comparing the performance of financial institutions vs non – financial institutions. As this research only focuses in India, there could be another study considering the performance of other densely-populated countries such as China and Indonesia, by also comparing their performances.

References


Abstract. Cultural monuments are one of the key factors in tourism and they influence the economic and social development of the municipality or region and above its degree of sustainability tourism. The analysis of the potential of the tourism in municipalities and its comparison can be made by various methods and techniques such as local expenditure model, cost-benefit analysis, multi-criteria evaluation of alternatives or cluster analysis. The method that can give an objective comparison of the size of anthropogenic sphere potentials of individual regions or possibly other territorial units is Data Envelopment Analysis (DEA). DEA models are usually used to find the relative efficiency among homogenous units according to selected criteria (inputs and outputs). According to the data taken from the Czech Statistical Office about the municipalities with extended powers in the Vysocina Region as basic spatial units we try to apply DEA analysis in terms of utilization of cultural and natural heritage for tourism. The main task is to identify the problematic places in this region and then suggest ways for improvement so that the region’s potential is primarily to fulfill sustainable tourism.

Keywords: Sustainable Regional Development; Cultural Monuments, DEA Models, Vysocina Region, Potential of the Tourism, Sustainable Tourism,


JEL Classifications: C44, O18

1. Introduction

Tourism belongs to one of the sectors that is especially well known by the several services provided to clients. As it is connected with natural heritage, cultural monuments, accommodation conditions in the given area, sport and cultural activities, the potential of tourism (describing the attractiveness of the area) is sometimes hard to define and difficult to measure (Stepaniuk, 2018; Yang, Černevičiūtė, 2017; Rivza, Kruzmetra, 2017). It should include:

- Nature’s full potential (mountains, national parks, lakes, ponds)
- Cultural potential (monuments, world or urban or rural heritage)
- Potential of infrastructure (types of accommodation and accommodation capacity, transportation, routes)
- Potential given by actions (sports, festivals, music, theatre, cinema)
- Potential given to destination safety, health level and environmental level.
The aim of our research is to compare the 15 municipalities with extended competences (ORP) in the Vysocina Region (Czech Republic) from the tourism potential (based on cultural potential) using multi-criteria evaluation of alternatives methods and Data envelopment analysis (DEA) models. As the number of municipalities in the region is small, only few inputs (two) and outputs (two) were used for DEA models to obtain relevant results. As the inputs number of monuments or utility based on the monuments and accommodation were used, outputs were represented by the number of overnight stays, domestic and foreign. All these inputs and outputs represent the quantitative non-monetary characteristics that might be used in DEA models for the destinations comparison (Fuchs 2004) from the destinations perspective – Fig. 1. Data from the Czechtourism (2017), Czech Statistical Office (2017), National Information and Consulting Centre for Culture (2016), National Heritage Institute (2016) and Institute for Spatial Development (2017) were used in this paper as well as coefficients calculated by us for the monuments utility.

![Fig. 1 DEA indicator to benchmark destination efficiency.](source: Fuchs, 2004)

DEA belongs to the operational research methods, especially to the linear programming models, that have been used many times in private or public sector to evaluate the performances of many different kinds of entities (countries, regions, enterprises, schools, hospitals, insurance companies, military units etc.) engaged in many different kinds of activities in various contexts (Cooper et al., 2004). These entities must have identical inputs and outputs to measure the efficiency from the same parameters. DEA models are widely used in comparison of countries, regions or districts from various points of view. Melecký and Stanicková (2012) evaluated the performance of the four Visegrad countries and their NUTS 2 regions. Friebel and Friebelová (2012) measured life quality in 14 Southwest Czech districts (LAU 1) by DEA using 4 inputs and 1 output. Kuncová and Sekničková (2013) compared economic performance of the 14 Czech regions.

The basic idea of DEA models consists in estimation of an efficient frontier that defines production and the possible set of problems (Charnes et al., 1978). Based on the set of available decision making units (DMUs) DEA estimates the so-called efficient frontier, and all DMUs projects on this frontier. If a DMU lies on the frontier, it is referred to as an efficient unit, otherwise it is considered inefficient (Cooper et al. 2004). DEA models can be oriented to inputs or outputs. In the case of input oriented models, we assume a fixed level of outputs (model CCR-I), the output oriented model assumes a fixed level of inputs and a maximize level of outputs with respect to given inputs (model CCR-O). These models are used if we assume constant returns to scale. In the case of variable returns to scale BCC (Banker, Charnes, Cooper) models are usually used. The review and detailed information about DEA models described Cooper et al. (2006). The basic idea for the efficiency calculation is to maximize the rate of the weighted sum of outputs divided by the weighted sum of inputs. For example, the model transformed (Charnes-Cooper transformation) into the linear programming form can be defined as follows (CCR-I):

\[
\text{Maximize } \sum \lambda_i y_i \text{ subject to } \sum \lambda_i x_i = 1, \forall i \in A
\]
Maximize

\[ z = \sum_{i=1}^{r} u_i y_{iq} \]  

Subject to:

\[ \sum_{i=1}^{r} u_i y_{ik} \leq \sum_{j=1}^{m} v_j x_{jk}, \quad k = 1, 2, \ldots, n \]  

\[ \sum_{j=1}^{m} v_j x_{jq} = 1 \]  

\[ u_i \geq 0, \quad i=1,2,\ldots,m \]  

\[ v_j \geq 0, \quad j=1,2,\ldots,r \]  

where \( q \) represents the evaluated DMU, \( y_{rq} \) are known outputs, \( x_{ij} \) are known inputs of the jth DMU, \( u_r \) and \( v_j \) are the variable weights to be determined by the solution of this problem. The efficient unit \( U_q \) lies on the efficient frontier in case that the optimal efficiency (calculated by the model) \( z = 1 \). The inefficient units have \( z \) lower than 1 (in CCR-I model) (Charnes et al., 1978). In the BCC-I model the formula (1) and the left hand side of the formula (2) are expanded by a variable \( \mu \) (dual variable assigned to the convexity condition) and the variables in the formulas (4) and (5) could be higher than a small number \( \varepsilon \). In the BCC-O model the main aim is to minimize the weighted sum of inputs, so the formula (3) becomes an objective function to be minimized (with additional dual variable \( \nu \) that could achieve any value and that is also added into the right hand side of the condition (2)), the \( z \) from the (1) formula must be equal to 1, and the conditions (4) and (5) are slightly changed as the \( u_i \) and \( v_j \) should be higher than a small number \( \varepsilon \). For the BCC-efficient units the optimal value is equal to 1, inefficient units have the objective function above 1. As it is usual to interpret inefficiency as a percentage, the inverted value of the indicators are used for the efficiency description.

2. Brief Literature Review

As mentioned above, it is not so easy to measure the tourism potential. Several methods and principles were applied: Beciu and Hontus (2014) measured the potential of tourism destinations by using the indicators of tourist traffic. Rufaidah (2016) used 4 different indexes (Index of Global Tourist Demand Change, Index of Domestic and Foreign Demand Variation in Time, Indicator of Total Accommodation Capacity Evolution, Index of Global Tourist Demand Distribution) to measure destination potentials in West Java, Indonesia. The study made by Dupeyras and MacCallum (2013) suggest several core indicators for measurement of the tourism potential, including not only the economic ones but also the number of overnight stays or natural, cultural and creative resources. DEA models were used by Fuchs (2004) for the efficiency measures for a benchmarking group comprising a total of 21 Tyrolean destination units.

3. Purpose

One of the basic assumptions of tourism development is the balance of the country. Tourism develops when there are natural, cultural or historical monuments and where as yet there has been no disruption of the balance between the elements of the environment. (Jurigová, Lencsésová, 2016)

Tourism is without a doubt a significant industry, helping many economies in many states grow. Various studies have proven the significance of tourism in today’s economy. Firstly, its economic value is regularly measured by the indicator of economic performance known as gross domestic product (GDP). The direct contribution of Travel & Tourism to GDP was 3.4% of total GDP in 2014 and is forecasted to grow in the period 2015-2025 by 2.8% per year. (Tučková, Kuncová, 2016)
The tourism potential components can be considered as follows:

- the potential of the natural components of the landscape (Bína, 2010),
- the potential of anthropogenic landscape components (Chalupa et al., 2016),
- the potential of infrastructure, especially accommodation and catering services and transport accessibility (Czech Statistical Office, 2017),

Tourism prerequisites could be also represented a set of natural and anthropogenic aspects, including their multi-level links, which create the prerequisites for the realization of tourism.

According to Mariot (1983), it can be divided into localization, realization and selection based. Three areas are crucial:

- the natural potential of tourism,
- tourism cultural potential,
- tourism infrastructure potential.

On the basis of this classification, it can be deduced that the potential of tourism includes within itself the set of spatial potentials of the various components of nature. Natural potential is therefore a complex combination of different influential geo-factors, such as geographic location, terrain morphology, climatic and hydrological conditions and vegetation. Tourist cultural potential, on one hand, is man-made with his activities and on the other hand, by the built anthropogenic environment he/she uses (the human component of the geosphere). It includes, for example, culture, tradition, religion, language of the area, specific way of production, transport and land use, but also urban and village buildings in various vertical and horizontal forms as well as the building materials used. Those which serve, for example, as institutions of culture, education, or tourism. Tourism infrastructure with its quantitative and qualitative aspects is an important prerequisite for the use of tourist natural and cultural potential, such as catering, transport, or sports and recreational opportunities. The tourist potential with its components (natural potential, tourism cultural potential and tourism infrastructure potential) is dynamically and constantly changing. The different phases of development of a tourism receiver area show a very close connection to the capacity of hotels, accommodations, tourist traffic of the hotels and the most important tourist traffic and utilisation indexes. (Attila, 2016)

Our comparison is aimed at the Vysocina region as one of the 14 regions in the Czech Republic. This region lies in the center of the Czech Republic between Bohemia and Moravia and its main region city is Jihlava (Fig. 2).

![Fig. 2 Czech Republic and the Vysocina region (in blue).](source: cestovatelskyraj.cz)
Vysocina region is considered to be mainly connected with agriculture and industry. The unemployment rate is usually below the republic average (in October 2017 it was 3.27% and the republic average was 3.6% - Czech Statistical Office, 2017) but it differs from the districts inside the region. The highest unemployment rate is in the Trebic district. The average wages, however, are lower than in other regions. The regional disparities can be seen especially in the socio-economic indicators. If we take into account the GDP per capita and unemployment rate we can see that there are also big differences between the centers of the region and in the municipalities. Those which lie far from the industrial centers or from the highways have lower GDP and also higher unemployment (Kuncová, Sekničková, 2013).

In our analysis of the tourism potential in the Vysocina region we decided to compare selected municipalities inside this region. As there are only 5 districts in Vysocina region it is not enough for the DEA model. It is not possible to obtain the relevant data for all 704 municipalities, so we analyzed the municipalities with extended competence refered to as ORO in Czech (15 in Vysocina region). These municipalities lie between the NUTS IV (LAU 1) – districts (5 in Vysocina region), and NUTS V (LAU 2) – municipalities (704 in Vysocina region) – Fig. 3.

For the DEA model it is necessary to define inputs and outputs. Inputs should characterize the important sources of the area that influence (usually in a positive way) the outputs. In the model two inputs and two outputs were used.

First input is connected with the number of monuments in the OPR area. Vysocina region is famous especially because of 3 UNESCO monuments (it is the highest number in comparison with other Czech regions) – these are the historical centre of Telc, the Pilgrimage Church of St. John of Nepomuk at Zelena Hora near Zdar nad Sazavou and the Jewish Ghetto combined with the St. Prokopus Basilica in Trebic (Kraj Vysočina, 2017). There are also other interesting and famous historical buildings and places – Fig. 4. The input in the first model covered all these monuments but as UNESCO monuments are more significant and attractive for the visitors than the others, we decided to changes this input for the second model into monuments utility instead of the number of monuments. The monuments utility was calculated via WSA (Weighted Sum Approach) method (also called WSM – Weighted Sum Method - for details see Triantaphyllou (2000)), where the weights for each type of monuments were set according to our previous research defining the importance (points) for each monument type (Vojáčková et al., 2016) – Table 1.
Table 1. Historical monuments’ weights calculation.

<table>
<thead>
<tr>
<th>Criterium (monuments)</th>
<th>points</th>
<th>weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNESCO</td>
<td>73.82</td>
<td>62.09%</td>
</tr>
<tr>
<td>MPR</td>
<td>20.82</td>
<td>17.51%</td>
</tr>
<tr>
<td>MPZ</td>
<td>3.33</td>
<td>2.80%</td>
</tr>
<tr>
<td>VPR</td>
<td>13.76</td>
<td>11.57%</td>
</tr>
<tr>
<td>VPZ</td>
<td>3.98</td>
<td>3.35%</td>
</tr>
<tr>
<td>NKP</td>
<td>3.18</td>
<td>2.67%</td>
</tr>
</tbody>
</table>

Source: Vojáčková et al., 2016, own calculations

Fig. 4 Cultural monuments in Vysocina region (NKP=national historic landmark; MPR=urban conservation area; MPZ=urban conservation zone; VPR=village conservation area; VPZ=village conservation zone).

Source: Kraj Vysočina, 2017

Table 2. Data for ORP in Vysocina region (inputs are in red, outputs in blue).

<table>
<thead>
<tr>
<th>ORP</th>
<th>MONUM. utility</th>
<th>MONUM. (number)</th>
<th>ACCOMODATION (number)</th>
<th>NIGHTS domestic</th>
<th>NIGHTS foreign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bystřice nad Pernštejnem</td>
<td>0.033</td>
<td>1</td>
<td>21</td>
<td>42446</td>
<td>4335</td>
</tr>
<tr>
<td>Havlíčkův Brod</td>
<td>0.237</td>
<td>8</td>
<td>31</td>
<td>67715</td>
<td>10037</td>
</tr>
<tr>
<td>Humpolec</td>
<td>0.044</td>
<td>1</td>
<td>27</td>
<td>41196</td>
<td>8257</td>
</tr>
<tr>
<td>Chotěboř</td>
<td>0.009</td>
<td>1</td>
<td>23</td>
<td>44230</td>
<td>6168</td>
</tr>
<tr>
<td>Jihlava</td>
<td>0.275</td>
<td>7</td>
<td>45</td>
<td>95015</td>
<td>31236</td>
</tr>
<tr>
<td>Moravské Budějovice</td>
<td>0.032</td>
<td>3</td>
<td>12</td>
<td>10725</td>
<td>1727</td>
</tr>
<tr>
<td>Náměšť nad Oslavou</td>
<td>0.066</td>
<td>3</td>
<td>16</td>
<td>27873</td>
<td>1631</td>
</tr>
<tr>
<td>Nové Město na Moravě</td>
<td>0.045</td>
<td>4</td>
<td>66</td>
<td>236192</td>
<td>13468</td>
</tr>
<tr>
<td>Pacov</td>
<td>0.043</td>
<td>2</td>
<td>8</td>
<td>9691</td>
<td>593</td>
</tr>
<tr>
<td>Pelhřimov</td>
<td>0.169</td>
<td>3</td>
<td>50</td>
<td>74888</td>
<td>30841</td>
</tr>
<tr>
<td>Světlá nad Sázavou</td>
<td>0.053</td>
<td>2</td>
<td>18</td>
<td>59890</td>
<td>3715</td>
</tr>
<tr>
<td>Telč</td>
<td>0.823</td>
<td>5</td>
<td>29</td>
<td>20755</td>
<td>10528</td>
</tr>
<tr>
<td>Třebíč</td>
<td>0.804</td>
<td>7</td>
<td>41</td>
<td>104097</td>
<td>13225</td>
</tr>
<tr>
<td>Velké Meziříčí</td>
<td>0.018</td>
<td>2</td>
<td>20</td>
<td>42429</td>
<td>6758</td>
</tr>
<tr>
<td>Žďár nad Sázavou</td>
<td>0.664</td>
<td>2</td>
<td>45</td>
<td>86294</td>
<td>14366</td>
</tr>
</tbody>
</table>

Source: Czech Statistical Office, 2017; own calculations
The second input covers all types of accommodation that are available within the given municipality area. Two outputs are aimed at the overnight domestic and foreign stays that are usually used as quantitative non-monetary characteristics of compared units (Fuchs, 2004). All inputs and outputs data are in Table 2.

**Results**

The comparison of municipalities with extended competences in Vysocina region was made according to the 2 inputs and 2 outputs through DEA models to describe the potential of tourism of these destinations. Finally, 4 DEA models were tried to see the influence of the selected inputs and outputs on the results (Table 3). For all of them the BCC output oriented models were used according to the selected inputs and outputs, the outputs could be changed a little easier than the inputs. Model BCC was used as variable returns to scale were expected.

**Table 3. Selected inputs and outputs in models**

<table>
<thead>
<tr>
<th>Model number</th>
<th>MONUM. utility</th>
<th>MONUM. (number)</th>
<th>ACCOMODATION (number)</th>
<th>NIGHTS domestic</th>
<th>NIGHTS foreign</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Table 4 summarizes all results. The numbers inside show the score of the DEA model for each ORP in the given model. The score 1 means that the ORP lies on the efficient frontier (so it can be seen as the best one according to the given inputs and outputs). Score lower than 1 shows the percentage of efficiency for the given unit. According to all models, only 2 ORP (Jihlava and Nové Město na Moravě) are efficient. Jihlava is the capital of the region and also the biggest town so it was expected be as efficient. Nové Město na Moravě has fewer monuments (and its utility is small) but it has the biggest number of different types of accommodation and also very high number of overnight stays. This fact is probably influenced not only by the monuments but mainly by the famous cross country-skiing area that host several competitions, European and World Cups. Two other ORP’s were efficient in 3 models (Pacov, Světlá nad Sázavou). Pacov has the smallest number of accommodation and only 2 important monuments. When monuments utility is taken into account (model 1), this ORP is very inefficient – this is mainly due to the fact that other ORP’s (like Nové Město na Moravě or Humpolec) have similar monuments utility but a higher number of overnight stays. However, if we take into account accommodation only or the number of monuments (both small) and number of overnight stays (again small), this unit seems to be efficient as the share of overnight stays per type of accommodation and 1 monument, it ranks much higher and is considered to be among best ones. For the Světlá nad Sázavou the reasons for its good position are similar.

Other two municipalities were efficient in two models (model 1 and 3) where the monuments utility was important input. These are Telč and Třebíč – both have UNESCO monuments in the area and the reason for the high monument utility. But when the number of monuments or the number of accommodation were used as inputs, these ORP’S were inefficient, especially (and surprisingly) Telč. Despite the UNESCO monument, the number of overnight stays were lower compared to the number of accommodation or number of monuments than in the other ORP’S. It might mean that the tourist goes to this municipality for one-day trip without an overnight stay (therefore, affecting the low number of overnight stays) or the number of accommodation is too high for the given number of overnight stays.

The low number of overnight stays in Telč is a very interesting finding because Telč, together with Prague and Český Krumlov has the three most important UNESCO monuments in the Czech Republic, listed on the UNESCO list as the first one in 1992. To explain the situation in Telč, it is possible to mention the following reasons. All the sights of Telč including the castle are concentrated on a relatively small area of the square. A visit to the square and castle usually lasts about an hour. Telč offers quite a few other attractions that would make tourists to spend the night. The second reason for the low number of overnight stays is a large number of private lodgings (it is estimated that they contribute to accommodation up to 40% and their services are not captured in CZSO statistics).
Table 4. Results of DEA BCC-O models for ORP in Vysocina region

<table>
<thead>
<tr>
<th>ORP (Municipalities with extended competences)</th>
<th>1.model monuments utility</th>
<th>2.model accommodation</th>
<th>3.model mon.utility + accommodation</th>
<th>4.model number of monuments + accommodation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bystřice nad Pernštějnem</td>
<td>0.224037</td>
<td>0.659402</td>
<td>0.659402</td>
<td>1</td>
</tr>
<tr>
<td>Havlíčkův Brod</td>
<td>0.446825</td>
<td>0.768258</td>
<td>0.796784</td>
<td>0.930435</td>
</tr>
<tr>
<td>Humolec</td>
<td>0.311194</td>
<td>0.607116</td>
<td>0.607116</td>
<td>1</td>
</tr>
<tr>
<td>Chotěboř</td>
<td>0.271671</td>
<td>0.680074</td>
<td>0.680074</td>
<td>1</td>
</tr>
<tr>
<td>Jihlava</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Moravské Budějovice</td>
<td>0.071232</td>
<td>0.502012</td>
<td>0.502012</td>
<td>0.502012</td>
</tr>
<tr>
<td>Náměšť nad Oslavou</td>
<td>0.12019</td>
<td>0.559135</td>
<td>0.576618</td>
<td>0.884892</td>
</tr>
<tr>
<td>Nové Město na Moravě</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pacov</td>
<td>0.041966</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pelhřimov</td>
<td>0.987354</td>
<td>0.987354</td>
<td>0.987354</td>
<td>1</td>
</tr>
<tr>
<td>Světlá nad Sázavou</td>
<td>0.26051</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Telč</td>
<td>1</td>
<td>0.585378</td>
<td>1</td>
<td>0.654082</td>
</tr>
<tr>
<td>Třebíč</td>
<td>1</td>
<td>0.844662</td>
<td>1</td>
<td>0.844662</td>
</tr>
<tr>
<td>Velké Meziříčí</td>
<td>0.280083</td>
<td>0.84065</td>
<td>0.84065</td>
<td>0.97828</td>
</tr>
<tr>
<td>Žďár nad Sázavou</td>
<td>0.823748</td>
<td>0.689166</td>
<td>0.823748</td>
<td>1</td>
</tr>
</tbody>
</table>

According to the 4. model there are next 5 ORP’s that were efficient: Bystřice nad Pernštějnem, Humolec, Chotěboř, Pelhřimov and Žďár nad Sázavou. The last one (Žďár na d Sázavou) has very high monuments utility as the third UNESCO monument in Vysocina region lies here. But, when only accommodation is taken into account, this ORP was not efficient as it had small number of overnight stays compared to number of accommodation. Three municipalities of these had very low monuments utility but when we combine the number of monuments and number of accommodation as inputs, they were efficient. Pelhřimov seems to be a special one among them – it has very high efficiency in all models as it has the second highest number of accommodation and the other characteristics were above average. The worst ORP from the cultural and an accommodation potential perspective was the municipality of Moravské Budějovice. It has an average number of monuments but a very low number of accommodation and the number of overnight stays per type of accommodation were the second lowest (only Telč was the worst in this comparison but it has higher number of monuments). This ORP lies on the border of the Region and also on the border of the Czech Republic far from highways and the monuments are probably less attractive than the other ones in Vysocina Region.

Conclusions

In conclusion, there is great potential of natural components in the ORP Jihlava and the related infrastructure for tourism which was confirmed during the research. ORP Jihlava should take advantage of this opportunity as there are more and more people who are attracted by nature, more so than exclusive holidays with long journeys and big crowds. The development of domestic tourism is also supported by the situation today where people or more afraid of international travel and realize that there are many beautiful places in Vysočina that offer beautiful holiday destinations. This is especially true for summer tourism when the potential of nature is sufficient to attract tourists from all over the Czech Republic and from neighbouring countries. UNESCO world heritage sites is a good example of how to increase attractiveness of the area. In nearby surrounding areas of Jihlava, we can find three UNESCO sites which greatly increase the number of visitors to the area. The entire Vysočina region can be a desirable form of tourism for those who prefer quiet and ecologically clean tourism attractions which are prerequisite for most of the region. On the contrary, some tourists can be discouraged, in some places, by an unattractive, agriculturally exploited rural landscape and, in some cases even by insufficiently developed basic and also accompanying tourism infrastructure. As the potential of the area is, in terms of tourism, enormous, we expect great use of this area for tourism in the future.
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ANALYSIS OF SOCIAL-ECONOMIC SECURITY OF ADMINISTRATIVE AREAS IN LATVIAN MUNICIPALITIES

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Abstract. The paper is devoted to the empiric assessment of social-economic security of administrative areas in Latvian municipalities. A generalized integral index of social-economic development of the territory of municipalities has been elaborated. This index was used to carry out the assessment of the level of social-economic security of Latvian municipalities in 2011 and in 2015 in order to identify priorities for the strategy of social-economic security.

Keywords: social-economic security, areas of Latvian municipalities.


JEL Codes: L26, M21, O11, R11, F52

1. Introduction

Social-economic security provides not only a country’s sustainable economic development, but also its sense of protection from internal and external threats. Municipalities implementing their autonomous functions are a prime warrant for providing people with social-economic security. Therefore, it is particularly important to establish an adequate model of social-economic security which allows describing the state of economy at macro and meso levels, carrying out analysis and forecast, and as a result identifying the best possible priorities for the strategy of social-economic security in Latvian municipalities. State administration bodies also need the established model of social-economic security in order to support the decision making process in the sphere of macroeconomic policy and development of measures for regulating market economy.

The methodological basis of the research are works of both western scientists and researchers from different countries in Central and Eastern Europe (Huber 2010; Balitskiy 2014; Rehm, Schlesinger 2010; Baublys 2015; Białoskórski 2012; Hacker 2012; Buzan 2007; Shadova 2015; TVaronavičienė 2012; Uberman, Žiković 2014; Senchagov 2002; Tambovcev 1995; Munteanu, Tamoshänenë 2015; Tumalavičius 2016; Nikolayevskyy 2014; Jordan et al. 2009; Koehler et al. 2012; Makstutis 2006; Taureck 2006).

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Security is a concept that has several levels. In a philosophical retrospective it is considered at least at two levels: at a micro-level or personal security and at a macro-level or social and state security. Since the second half of the 19th century, personal security, social and state securities have not been considered separately, they are interrelated and interdependent. If there are any objective or subjective reasons that pose a threat at a macro-level, they will also pose a threat at a micro-level. At the same time, underestimation of the importance of security at a micro-level may act as a catalyst for the weakening of security at a macro-level. Meanwhile, the study into economic security only at a macro-level is a kind of average value. From this perspective, outcomes of a municipality’s economic activity are often neglected on the overall background of other territories in Latvia, and it becomes virtually impossible to identify any “bottlenecks” in their work. This explains the need for analysis of economic security at both the country’s level and municipal level – at a meso-level. Another reason for the need for considering a regional factor within the issue of economic security is a high degree of development disparity between administrative areas in Latvia’s municipalities.

As this phenomenon possesses a lot of multifaceted and multilevel features, there is no generally accepted definition of social-economic security in the world. However, it is possible to identify a few features that describe a bigger picture of what this phenomenon means.

First, social-economic security is a complex and dynamic concept. This complexity appears, on the one hand, because of a lot of economic, social, and financial processes this concept includes. On the other hand, the complexity is determined by the globalization processes and fast rates of economic processes and phenomena at both national and global levels (Jolly and Basu Ray 2007; Kulaghin 2010).

Second, social-economic security should be interpreted as:
– a significant factor of national security that provides resources and a dynamic balance for other components of this system;
– one of the indicators of national, regional, and global security that is the purpose of every person, community, national state, etc.;
– a priority task of governments, regional, and international organizations that strive to provide and guarantee global security of an individual;
– a state of a national economy understood as a source and foundation for elimination of poverty, starvation, social and economic inequality between both individuals and regions within one country.

Third, social-economic security means protection of vitally important interests of a society, country, and citizens, as well as national values and way of living from external and internal threats.

Fourth, social-economic security is a fundamental human right. It is the condition when risks and threats are under control in order to protect individuals and communities.

Fifth, social-economic security is a resource necessary for everyday life of individuals and communities in order to achieve their personal or collective aspirations.

Sixth, social-economic security is the result of interaction between external and internal factors that promote the processes of production, distribution, and consumption of goods and services produced by a national economy.

Seventh, government and non-government organizations play an important role in the achievement of social-economic security at national as well as regional and global levels.

Analyzing the definitions of social-economic security, we can state that the existing definitions do not include a level differentiation, although it is obvious that the content of the concept of social-economic security at macro, meso, and micro levels will be different. The author of the research believes that it would be useful to introduce a level differentiation of the concept “social-economic security” on the basis of the fact that goals, objectives, and, most significantly, indices or factors of this indicator will be different for subjects at different levels.
Therefore, on the basis of the aim of the research, the author defines social-economic security of municipal administrative areas as a complex category which is based on the ability of a municipal government to establish mechanisms for implementation of its autonomous functions and activities, to ensure social-economic security on the basis of a sustainable growth of its indicators, as well as to contribute to a maximum satisfaction of the infrastructure needs of residents and entrepreneurs on its territory.

In modern research there are three main approaches to social-economic security (Lavrinenko et al. 2016). The first approach is characterized by the construction of an integral indicator (Osberg, Sharpe 2005). These indices may be obtained from several data sources, although they are sensitive to measures applied and how they are weighed. Unfortunately, the theory provides limited recommendations on how to weigh these differential measures partially because of the scarcity of the research, interaction and relative influence of various economic risks. Taking the “named risk” (Osberg, Sharpe 2005), this approach also identifies the list of economic risks at a definite point of time (it also considers that this list is the same for different subgroups) instead of admitting the change of risk combinations related to household finances as a threat to economic security during the period under study (or in different groups).

The second approach involves the assessment of adequacy of resources or sufficiency of assets (e.g. Lusardi et al. 2011). The level of resources or wealth obviously plays an important role for the economic insecurity. This approach possesses the advantages of simplicity and dependence on one source of data. These indices, although they are better understood as measures of the level of resources or buffer capacity but not as a measure of conscientious security or a lack of security. In particular, the adequacy of measure does not consider the possibility that an individual will undergo a reverse and will have to rest upon wealth or resources. This possibility may vary both with time and between individuals. Implemented lack of security requires matching inadequate buffers and real experience of economic losses.

The third approach suggests using the overall household income, including retirement pension benefits of household members, planned medical expenses of a household, debt expenses of a household, and the amount of financial savings and liquidation property (Hacker et al. 2013).

Social-economic security is a concept that should be considered at several levels, and it includes a number of indicators which characterize certain conditions. However, the nature of the concept is so complex that it makes it difficult for an individual to fully grasp it. Therefore, in order to assess the level of social-economic security of a territory, there is a need for creating an integral indicator in the form of a scalar which makes it possible to carry out a comparative assessment and rating of territories at a meso level using all available primary statistical indicators from the reports on 119 administrative units in Latvia in 2014, as well as the data of the Regional Development Indicators Module http://raim.gov.lv/.

2. Methodology for construction of an integral indicator

Social-economic security is a complex social-economic category; therefore, primary statistical indicators for the regions under study may be presented in the following way:

$$X = \begin{bmatrix}
    x_{11}, x_{12}, \ldots, x_{1n} \\
    \ldots \ldots \ldots \ldots \ldots \ldots
    \ldots \\
    x_{i1}, x_{i2}, \ldots, x_{in} \\
    \ldots \ldots \ldots \ldots \ldots \ldots
    \ldots \\
    x_{m1}, x_{m2}, \ldots, x_{mn}
\end{bmatrix}$$

(1)

where:

$m$ – is a number of regions, $n$ is a number of indicators which characterise the standard of living.
Therefore, a multivariate analysis can be applied for this kind of data (Kosiedovskis, Lavrinenko 2014).

Considering various units for measuring primary indicators, it is necessary to unify the data. The authors carry out the unification on the basis of the linear scaling principle, as a result of which the area of possible values is determined by the interval $[0;10]$ by formula (Lavrinenko, Lavrinoviča 2013):

\[
X_{ij}^* = \frac{X_{ij} - X_{\text{min} j}}{X_{\text{max} j} - X_{\text{min} j}} \cdot 10
\]

(2)

\[
X_{ij}^* = \frac{X_{\text{max} j} - X_{ij}}{X_{\text{max} j} - X_{\text{min} j}} \cdot 10
\]

(3)

– by indicators-destimulants, where: $X_{ij}^*$ — a unified value of the indicator “$j$” for a municipal territory “$i$”, $X_{\text{min} j}$ and $X_{\text{max} j}$ — the lowest (the worst) and the largest (the best) values of the initial indicator in the period under study.

**Table 1.** Primary statistical indices of the integral indicator of social-economic security in Latvia’s territories.

<table>
<thead>
<tr>
<th>Municipality’s sphere of activity</th>
<th>Indices</th>
</tr>
</thead>
</table>
| F1. General economic              | 1. Total income of a municipality  
2. Total expense of a municipality  
3. Number of economically active commercial communities per 1,000 inhabitants  
4. Number of economically active self-employed individuals per 1,000 inhabitants  
5. Number of economically active farm households per 1,000 inhabitants |
| F2. Investment                    | 1. EU fund per 1,000 inhabitants  
2. Total sum of direct foreign investment  
3. Number of projects per 1,000 inhabitants |
| F3. Industrial                    | 1. Income tax (a municipality’s share)  
2. Number of income tax payers at a place of a company registration  
3. Collected sum of income tax per 1 inhabitant at a place of a company registered address  
4. Advertisement tax  
5. Tax on trade in public places  
6. Number of registered companies  
7. Number of liquidated companies |
| F4. Educational                   | 1. A municipality’s expense on education  
2. Number of pre-school educational institutions  
3. Number of general education institutions  
4. Number of programmes implemented at vocational schools |
| F5. Infrastructure                | 1. A municipality’s expense on public maintenance of a territory  
2. Immovable property tax  
3. General density of motorways |
| F6. Ecological                    | 1. A municipality’s expense on environment protection |
| F7. Cultural and recreational     | 1. A municipality’s expense on leisure, culture, and religion  
2. Revenue from selling tickets  
3. Tax on gambling |
| F8. Employment                    | 1. Level of unemployment  
2. Number of employers  
3. Number of income tax payers at an employee’s declared address  
4. Collected sum of income tax per 1 inhabitant at an employee’s declared address  
5. Share of long-term unemployed persons of the total number of unemployed persons |
| F9. Law enforcement               | 1. A municipality’s expense on ensuring public order  
2. Number of crimes per 1,000 inhabitants  
3. Number of serious crimes per 1,000 inhabitants |
| F10. Insuring of social protection and healthcare | 1. A municipality’s expense on social sphere  
2. Number of households receiving housing benefits  
3. Number of benefits on guaranteed level of income  
4. Number of persons with a low income status (% out of total number of inhabitants)  
5. Share of inhabitants who receive social services (% out of total number of inhabitants)  
6. A municipality’s expense on medicine |

*Source:* compiled on the basis on the data on 119 administrative units in Latvia in 2014 and the data of the Regional Development Indicators Module [http://raim.gov.lv/](http://raim.gov.lv/)
The calculation of the indicator of social-economic security was carried out on the basis of the method of sums of the factors that characterise a municipality’s spheres of activity which in turn were calculated as a sum of unified statistical indicators included in every sphere:

\[ X_i = \sum_{j=1}^{5} F_{1j} + \sum_{j=1}^{3} F_{2j} + \ldots + \sum_{j=1}^{6} F_{10j} \]  

(4)

where:

- \( X_i \) – a complex assessment of social-economic security for region \( i \);
- \( F_{kj} \) – the value of a factor of social-economic security characterizing every sphere of activity of a municipality, where there factors are calculated as a sum of statistical indicators that characterize them.

It is convenient to determine a list of prerogatives\(^2\) of social-economic security for every municipality on the basis of the ranked by a degree of decreasing of problematicity and significance of the indices included in the calculation of the indicator. It is also necessary to take into account the lowest ranking values of these indices.

It is also possible to determine the prerogatives of social-economic security according to factors \( F_1, F_2, \ldots, F_{10} \) of social-economic security.

The principle of determining the prerogatives of social-economic security of municipal territories is schematically presented on Figure 1.

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\(^2\) “prerogative” originated from Latin “praerogativus”, i.e. “chosen to ask first”; in this paper the word is used to denote those indices included in an integral indicator whose values need to be improved in the first place.

---

**Fig. 1.** Area of prerogative factors of social-economic security

*Source:* elaborated by the authors on the basis of the Aivazian, S. A. (2005). Development and Analysis of Quality of Life Integral Indicators in Samara Oblast. p.12
a certain expertly-specified boundary value can be considered as significant (Lavrinenko 2010).

Quantitatively identified levels of problematicity and significance of factors of social-economic security allow using other methods of identifying prerogatives and directions of a regional policy. For example, scalarization methods may be applied in order to identify prerogatives. In particular, a weighted total of values of problematicity and significance of a factor, or a distance from the factor to the point that has a maximum possible value of problematicity and significance (in the dimension “significance-problematicity) may be used as a function identifying a prerogative of a factor.

Such a mechanism for identifying prerogatives allows not only to make a list of prerogatives but also to create an ordered system of prerogatives and directions for the improvement of social-economic security of a territory.

In order to identify problem aspects of social-economic security of a territory, it is necessary, on the one hand, to draw on the analysis of the dynamics of indicators, on the other hand, on the analysis of the state of a region in relation to other regions with a similar level of social-economic security. Therefore, it is possible to suppose that a negative dynamics of an indicator in relation to its past value, and a simultaneous deterioration of a region’s state according to a certain indicator in relation to relatively similar regions, indicate the existence of a so-called “problem” area. It allows using the dynamics of indicators for identifying prerogatives in the factors of social-economic security from the viewpoint of the necessity of influencing it by municipal or government policy (Aivazian 2005).

In other words, the deterioration of a territory’s condition according to an indicator in relation to its values in the past and in relation to relatively similar territories means a high degree of prerogative for this indicator from the viewpoint of the need and possibility for its change. However, a sustainable improvement of an indicator’s value in relation to the past values of an indicator of similar territories, in general, means simply the need for maintaining the current trend.

According to the abovementioned statement, indicators are divided into four problem groups (see Table 2) according to the following algorithm (Lavrinenko 2015). Indicators whose values deteriorated as compared to the values in the previous periods and values in the ratings for other territories fall into the first group (first problem class). Indicators whose values deteriorated as compared to other territories, but improved or remained at the same level as compared to the values in the previous periods fall into the second group (second problem class). Indicators whose values deteriorated as compared to their previous values, but improved or remained at the same level as compared to the rating for other territories fall into the third group (third problem class). Indicators whose values improved as compared to both their previous values and the rating for other territories fall into the fourth group (fourth problem class).

The first group contains the most problem indicators, i.e. the indicators whose values should be “improved” in the first place. The fourth group is the least problem from the viewpoint of the values of indicators.

<table>
<thead>
<tr>
<th>Tab. 2. Matrix of the indicator problematicity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Position in relation to other regions</strong></td>
</tr>
<tr>
<td>Deteriorates</td>
</tr>
<tr>
<td><strong>A region’s position in relation to its own indicators in the past (dynamics)</strong></td>
</tr>
<tr>
<td>Deteriorates</td>
</tr>
<tr>
<td><strong>Third class of problematicity</strong></td>
</tr>
</tbody>
</table>


The simplest criterion for identifying the place in the problematicity matrix is the change in the value of the indicator during a certain period of time.
3. Results

In order to carry out a dynamic analysis of social-economic security of administrative areas in Latvia’s municipalities, the results for 2011, which are shown on Figure 2 are taken as basic indicators. They are provisionally divided into quintiles. Territories with the best indicators of social-economic security are coloured white (quintile 5), territories with the worst indicators – black (quintile 1).

A cartographic reflection of the data visually shows the main problem area, which is a south-eastern part of Latvia. The largest city of the south-eastern part of the country – Daugavpils boasts and falls into quintile 4, whilst the majority of municipality’s areas surrounding it fall into the worst quintile 1.

*North-western* Latvia is much more successful in terms of social-economic security. Majority territories here fall into quintile 4, and the largest city in this part of the country – Ventspils falls into quintile 5, the most successful quintile.

Indicators of social-economic security are a little lower in *south-western* Latvia. The largest city in this part of the country Liepaja falls into quintile 4, and it stands out on the background of other territories surrounding it.

![Fig. 2. Social-economic security of Latvia’s municipal territories according to the data for 2011](source: developed by the authors)

The capital city and municipalities surrounding it demonstrate the highest level of social-economic security according to the data for 2011.

In order to carry out a dynamic analysis of social-economic security of administrative areas in Latvia’s municipalities, the results for 2015, which are shown on Figure 3 are taken as comparison indicators.
When comparing the two maps, it is evident that the situation in the most problem south-eastern Latvia improved a little during 5 years. Part of the municipal territories in the south-east moved from quintile 1 to quintile 2. The largest city in this part of Latvia – Daugavpils didn’t change its position.

The north-western part of Latvia worsened its indicators a little. Two largest regions in this part of the country – Ventspils and Talsi went 1 stage down in the rating. The largest city in the north-west – Ventspils stayed in the most successful quintile 5.

The south-western part of the country dramatically improved the indicators of social-economic security, and the largest city of this region – Liepaja fell into quintile 5, the best quintile.

Central part of Latvia, the capital, and territories surrounding it did not change in relation to the level of social-economic security.

However, it should be pointed out that the quintile distribution provides only the general idea of the dynamics of the process, and it works well for a cartographic representation of the data. For a deeper understanding of the dynamics of change in the level of social-economic security of territories in Latvia’s municipalities for the period 2011–2015, it is better to use the matrix of the indicator problematicity which allows classifying territories according to their problematicity.
Latvia’s municipalities which improved their level of social-economic security in relation to their own indicators, as well as in relation to the indicators of other municipalities are marked with the white colour (problematicity class 4) on Figure 4. There are 16% of such territories in Latvia.

Territories which improved their own indicators of social-economic security, although their indicators worsened or remained the same in relation to other Latvia’s municipalities are marked with the light-grey colour (problematicity class 3) on Figure 4. There are 15% of such territories in Latvia.

Municipal territories whose indicator of social-economic security worsened in relation to their own indicator at the beginning of the period, but improved or remained the same in relation to other territories during the same period are marked with the dark-grey colour (problematicity class 2) on Figure 4. 36% of the total number of municipalities has this problematicity class.

Fig. 4. Social-economic security of territories in Latvia’s municipalities according to problematicity class (2011 – 2015)

*Source*: developed by the authors

Fig. 5. Distribution of Latvia’s municipal territories according to the problematicity class

*Source*: developed by the authors on the basis of the data in the period 2011-2015
Territories of Latvian’s municipalities which during the period under study worsened their indicators of social-economic security in relation to their own indicators, as well as in relation to other territories’ indicators are marked with the black colour (problematicity class 1). These territories comprise one third of the country’s territory.

Figure 5 very vividly shows that two thirds of Latvia’s territory demonstrated a negative dynamics of social-economic security during the period 2011–2015. At the same time Figure 4 shows that the distribution of the problematicity classes does not depend on the location of one or another of Latvia’s historic regions (Latgale, Vidzeme, Zemgale, Kurzeme). Therefore, on the basis of the data, it is difficult to identify the most backward of Latvia’s regions or the most secure region in terms of social-economic security.

Nevertheless, a cartographic analysis distinguishes Latgale as a place of intercrossing of two zones of problematicity – the extended problem territories beginning and ending by the country’s boundaries. Under a closer examination, it is possible to notice (see Fig. 6) that there is a zone of problematicity which includes Daugavpils city, Daugavpils, Aglona, Kraslava, Dagda, Zilupe, Ludza, Cibla, Karsava, Balvi, Baltinava, Vilaka, Rezekne region, and Rezekne city in the south-east of the country, along the borders with Belarus and Russia. The zone ends at the border with Estonia and consists mainly of the municipalities that fall into the 2nd class of problematicity.

The second zone of problematicity begins at the south-east of Latvia, goes west and ends at the border with Estonia and the Riga Bay. This zone includes mainly municipalities that fall into the 1st class of problematicity: Kraslava, Rezekne, Madona, Cesvaine, Jaunpiebalga, Vecpiebalga, Priekule, Valmiera, Limbazi, and Salacgriva regions.

![Fig. 6. Zones of problematicity of social-economic security of Latvia's municipal territories (the period 2011–2015)](source: developed by the authors)
Conclusions

Social-economic security is a basic need for an individual, or a household, as well as for various groups of people, society, and the country in general. Municipalities implementing their autonomous functions are a primary warrantor for the provision of social-economic security for their people.

Taking into consideration the negative balance of the growth of population in the country, as well as a free migration of people both across the country and the European Union, the competition among municipalities for the number of residents who declare their place of residence on one or another administrative territory has become stiff. In this situation the ability of a municipal government to create mechanisms for implementing its autonomous functions and spheres of activity, to provide social-economic stability on the basis of a stable growth of its indicators, as well as to contribute to a maximum satisfaction of infrastructure needs of people and entrepreneurs on its territory has become urgent. The research may become a methodological basis for it, as it provides an opportunity for a comparative analysis of the quality of work of both a municipality’s political and executive authority in planning and implementing the budget.

As a result of the research, on the basis of the data from the period 2011–2015, every municipality was assigned its own problem class which was depicted in a cartographic form. This allowed identifying problem areas, as well as extended problem zones which run within the country’s borders. Taking into consideration their close proximity to the European Union’s borders, it should be concluded that these territories require the development of a special set of measures for the improvement of their level of social-economic security.

References:


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BUSINESS ENVIRONMENT ANALYSIS BASED ON THE GLOBAL COMPETITIVENESS INDEX (GCI) AND DOING BUSINESS (DB): CASE STUDY SLOVAKIA

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Abstract. Since the quality of the business environment is decisive for the inflow of investments in the country, this paper is focused on a brief analysis of the Slovak business environment based on international indicators. Assessing the quality of the business environment is the assessment of the level of the individual components of the business environment. A high-quality business environment that creates the conditions for long-term economic growth is a basic precondition for business development and increasing the competitiveness of the country. Elements of the business environment in the country constitute a legislative framework for business and law enforcement, administrative and financial (tax and fee) burdens, interference with business freedom and business infrastructure (conditions, quality and availability of key factors of production and business services). It is clear from this that the business environment is a complex variable, including many areas. Therefore, this paper will point to some selected areas of business environment in Slovakia. A sustainable business environment constantly innovates and simplifies individual indicators affecting businesses on the market. The paper provides results of the analysis of business environments of Slovakia over 2012 - 2018 (GCI) on the basis of data provided by organisations dealing with business environment surveys such as the World Bank and World Economic Forum.

Keywords: business environment, doing business, global competitiveness report, Slovak republic


JEL Classifications: E22, F21, F43

1. Introduction

Assessing the quality of the business environment is the assessment of the level of the individual components of the business environment. It is important to select appropriate indicators and select appropriate resources. Each country has its own specific business environment affected by wide spectrum of factors, and there is ongoing discussion how this environment has to be evaluated (e.g. Pavlova, Šenfelde 2017; Komarova et al. 2018; Lietuvnikė et al. 2018; Veselovsky et al. 2018; Tvaronavičienė et al. 2018; Pietrzak et al. 2018).

This paper is based on rather conventional approach. Doing business also involves so called business risk, which can be characterised as likelihood of taking a negative direction from reaching identified goals. In their business activities, entrepreneurs are also exposed to influences preventing them from achieving anticipated success. A set of influences affecting the existence and development of all business activities is generally de-
noted as business environment. The results of business activities are considerably dependent on the business environment a company operates in. Conditions under which companies operate, or develop their activities, have a significant impact on their performance, competitiveness and growth potential, as well as they determine the attractiveness of a particular state for foreign investors.

Within interstate comparison, the term business environment can also be defined on the basis of definitions used by international organisations. English term business environment is used by e.g. UNCTAD and World Bank’s Department for Small and Medium Enterprises, while the term business climate is used by e.g. Danish and Dutch governments. The term investment climate can be found in the documents of the World Bank and UNIDO, and the term enabling environment is used by the OECD.

Canadian International Development Agency characterises business environment as the existence of a competitive domestic market linked with the global economy, managed by a well-defined legal and regulatory environment and equipped with a strong and growing human capital base and sufficiently developed infrastructure. The issue of determinants of business environment is up-to-date and dealt with in a number of publications by both Slovak and foreign authors. The significance of factors affecting business environment is dealt with by e.g. Guay (2014), Hallberg (2006), Hamilton and Webster (2015), Harrison (2014) and. Wetherly, and Otter (2014), Wagner (2016). Hallberg explains that business rules are laid down by governments through adopted decisions. Positive principles such as transparency, responsibility, encouragement of competition, enforceability of rights and safeguarding of assets should be applied upon the formation, respectively improvement of conditions for business (Hallberg, 2006).

Wetherly opines that mutual interaction occurs between business entities and business environment. Businesses are influenced by the environment they operate in as well as they have an influence on their environment. It is in the interest of businesses to participate in the formation of business environment in order to enforce their own measures with resulting benefits for them (Wetherly, Otter, 2014). According to Harrison, a particular business environment can be characterised on the basis of identifying and detailing its key factors and perspectives. In some cases, individual perspectives are denoted as environments themselves with regard to the fact that they frame business environment as a whole (Harrison, 2014). New trends in business and startup communities’ among young people are focusing on creativity, new ideas and innovations (Hudáková, Papula, 2016).

2. Methodology

Defining the business environment is not a simple task due to the fact that it is influenced by a number of factors ranging from the economic and political environment to the issues of infrastructure, technology or specific needs in a particular sector or entity. Under business environment, the following areas are monitored:

- state of the business environment of the country - investment climate, legal conditions, key sectors, education, science and research;
- legislative environment - suitability, inadequacy of legislation, law enforcement, transparency of business regulation, administrative burden, investor protection;
- tax and finance area - tax burden, availability of business credit, secondary insolvency;
- the level of cooperation between suppliers and customers - geographically, commodity, orientation to the internal market, export, integration rate and cooperation;
- business characteristics and market conditions - diversification of business disciplines, specifications and trends of individual sectors, size of enterprises, ownership structure, competition, demand, crime, corruption environment;
- labor market - flexibility, market rigidity, employment costs, labor force qualifications, territorial and age structure;
- innovation and technological level;
- services for entrepreneurs - ICT services, transport infrastructure, rental rates, business premises;
- business support - consultancy services, support programs.
Analysis and comparison of business environments are applied in order to find out identical and differing qualities of the monitored entities, comparing data obtained by organisations specialising in business environment surveys. Data related to business environments obtained by internationally respected organisations specialising in the analysis of conditions for business in the majority of countries are compared. Such organisations most frequently publish the results of their analyses as evaluations in the form of numerical indices, rankings and summary reports.

Comparison between states is inter alia provided by indices and annuals of international organizations that try to make the most objective consideration of the conditions of the environment. The evaluation is based on available statistical data, but also on questionnaire surveys, where entrepreneurs can express themselves subjectively. Each factor is assigned a certain weight so that the influence of the factors is the same and that international comparisons can be made.

In terms of the Slovak Republic, entrepreneurship has an irreplaceable role, especially in the area of job creation and regional development. The business environment, in its broadest sense, reflects the quality of economic conditions and assumptions for the economic activity of business entities. A high-quality business environment that creates the conditions for long-term economic growth is a basic precondition for business development and increased competitiveness of the Slovak Republic.

Business environment in Slovakia is compared on the basis of evaluations of the World Bank and World Economic Forum, which are regularly provided in the following publications:

- Doing Business (The World Bank) – is focused on difficulties in business, it evaluates a group of particular processes taking place in business, and is especially grounded on case studies, i.e. actual situations;
- Global Competitiveness Report (The World Economic Forum) – evaluates so called pillars of competitiveness in a country, respectively specific areas affecting business activities and national economic growth.

3. Results and Discussion

Perhaps the best-known and most used assessment is the ranking of the World Economic Forum, which has been compiling the Global Competitiveness Report every year since 2004. This Yearbook presents indicators and categories that are components of the Global Competitiveness Index (GCI). The index distinguishes between 12 key pillars, listed in three categories. The index is the result of a combination of publicly available statistical data and survey results among more than 13,000 executives, as some of the factors presented in this index are not statistically measurable. This is one of the most comprehensive comparisons of countries in the world.

The index demonstrates competitiveness as a complex phenomenon, which can be improved through reforms in certain areas that improve countries efficiency in the long run. It is made up of 113 variables, of which about two-thirds are based on questionnaire answer questions - soft data and one third represent statistics from publicly available sources - hard data.

Piles of GCI are divided into three basic groups to take into account their importance for individual countries at different stages of their development. Essential requirements are crucial for countries whose economy is based on resources used. Factors that represent efficiency improvements are key to economies that are based on efficiency. The last set of factors, innovative and sophistication factors, are typical of knowledge-based economies that are based on innovation and production of new and different products using the most advanced manufacturing processes.

The report for 2017/2018 includes 137 economies. In the 2017/2018 report, Slovakia is ranked 59th out of 137, which represents improvement over the previous year. A rating has also improved, which has been on the rise since 2015 (Table 1).
Table 1. Placement of Slovakia in GCI

<table>
<thead>
<tr>
<th>Year</th>
<th>Placement/total</th>
<th>Ranking points (out of 7 pt.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012/2013</td>
<td>71/144</td>
<td>4,14</td>
</tr>
<tr>
<td>2013/2014</td>
<td>78/148</td>
<td>4,10</td>
</tr>
<tr>
<td>2014/2015</td>
<td>75/144</td>
<td>4,15</td>
</tr>
<tr>
<td>2015/2016</td>
<td>67/140</td>
<td>4,20</td>
</tr>
<tr>
<td>2016/2017</td>
<td>65/138</td>
<td>4,28</td>
</tr>
<tr>
<td>2017/2018</td>
<td>59/137</td>
<td>4,33</td>
</tr>
</tbody>
</table>

*Source: own processing out of data from the World Economic Forum*

In terms of individual pillars, Slovakia ranked worst in the pillar of the Institution (93\textsuperscript{rd}), Labor Force Efficiency (87\textsuperscript{th}) and Innovation (67\textsuperscript{th}). Within these pillars, it also scored the lowest score (Innovation 3.3p, Institution 3.5p, Labor Market Efficiency 4p from 7p). On the contrary, it was best placed in the pillars Financial Market Development (32\textsuperscript{nd} place), Macroeconomic Environment (35\textsuperscript{th}) and Technological Readiness (42\textsuperscript{nd}). Highest score was reached within the pillar of Health and Basic Education (6.1p), Followed by Macroeconomic Environment (5.4p) and Technological Readiness (5.1p). In the last sections (129-131 of 137), Slovakia has settled on the issue of the efficiency of the settlement of labor disputes through judicial proceedings, the effectiveness of the settlement of the law enforcement attack, the burden of government regulation, the protectionism of government officials, the ability of the landscape to attract talent and the effect of taxation on labor. Judiciary independence (119\textsuperscript{th} place), the quality of the education system (118\textsuperscript{th} place), the ability of the country to maintain talents (125\textsuperscript{th} place), the practices of recruitment and dismissal of employees (118\textsuperscript{th} place), the ethical behavior of companies (105\textsuperscript{th} place), level of taxation (113\textsuperscript{th} place) and unavailability of scientists and engineers (104\textsuperscript{th} place). In most cases, these are areas that may have a significant negative impact on the attraction of foreign investment, particularly taxation, judiciary and company ethics (in the case of subcontracting), the education system and the outflow of talent from the country. These can cause a lack of qualified workforce, which is already a problem. On the contrary, factors such as high export rates (9\textsuperscript{th} place), transfer of technology and FDI (16\textsuperscript{th} place), prevalence of foreign ownership (6\textsuperscript{th} place), foreign trade tariffs (6\textsuperscript{th} place) or easy access to financial capital (23\textsuperscript{rd} place) either on the one hand indicate, that Slovakia is becoming an attractive country for foreign investors (in particular the prevalence of foreign ownership) or, on the contrary, may have a positive effect on investors (eg capital availability). Corruption, inefficient government bureaucracy, the level of taxation, tax regulation, and restrictions on the labor market have been identified as the most problematic factors for entrepreneurship. On the contrary, the perceived level of inflation, population health, regulation of foreign currencies, crime and access to finance it’s the countries benefit.

Every year, the World Bank prepares a Doing Business report that tracks quality and business environment reform. The goal is to improve business conditions in different areas of the world. This is a valuable and expertly-based comparison that allows identification of the strengths and weaknesses of individual countries. The evaluation focuses on legislative standards in business. It is based on a comparison of the related legislation, length and cost of judicial and administrative procedures. It focuses on the following areas: starting a business, building permit, access to engineering networks, real estate registration, project credit, business protection, tax burden, cross-border trading, enforcement of customer terms and insolvency solutions. Countries ratings are determined based on a numerical index determined by calculation from the obtained quantified data. Quantification of the information obtained is achieved by the application of specialized practices and methods. Highest numerical index, respectively the score that the country can receive in the ranking is 100 points. Doing business, when analyzing business conditions, uses standardized model situations that allow you to evaluate the real status of the surveyed area. For the Doing Business project, the World Bank is particularly keen to analyze those indicators that are substantially affecting both small and medium-sized business entities.

In Doing Business ranking Slovakia took 39\textsuperscript{th} place in 2017, 33\textsuperscript{rd} place in 2016 and 29\textsuperscript{th} place in 2015. The score of Slovakia was also worse then previous years. The most problematic were licensing, small investor protec-
tion, contract recovery, and start-ups. On the contrary, the area of cross-border trading and property registration has been well-ranked. On some selected categories we will present the placement of Slovakia in DB2018. For these categories we selected:

- Starting a business – which represents evaluation of the duration and expenses related to the establishment of a limited liability company, the amount of the minimum due, the basic capital needed to set up the company;
- Getting Building Permits – assessing the duration and costs associated with obtaining the relevant documents necessary for the construction of the property, also considering the quality control of the construction;
- Connection of the company to the electricity grid – evaluation of the duration and expenses necessary for connection to the electricity grid, reliability of electricity supply, transparency and affordability of tariffs and the price of electricity;
- Tax burden – the assessment of the number of tax payments, time related to tax administration and the collection and selection of taxes also considers the tax burden on the business entity.

Starting a business category: By starting a business we need to follow certain procedures. The time is given in days, but it does not count the preparation of the written documentation and the necessary documents. The average time is less than thirteen days from filing the application until the start of the business in a Ltd company. Start of business in the Slovak Republic DB index was given 86.95 points, which is improvement by 0.05 points in comparison with the previous year 2017. The top-rated country in this category is again New Zealand with a score of 99.96. Opening business in New Zealand is possible within one day. Only one process is needed than in the Slovak Republic you need up to seven processes (Table 2).

Table 2. Starting a business category – Slovakia – DB2018

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedures (number)</td>
<td>7</td>
</tr>
<tr>
<td>Time (days)</td>
<td>12,5</td>
</tr>
<tr>
<td>Costs (% of the economy’s income per capita)</td>
<td>1,1</td>
</tr>
<tr>
<td>Minimum capital for establishing Ltd. company (EUR)</td>
<td>2500</td>
</tr>
</tbody>
</table>

Source: own processing out of data from the World Bank Group (DB2018 report)

Getting Building Permits category: In the process of obtaining a building permit, Slovakia finished with 67.82 points at 91st position. Over the last five years, no new reforms have been made in this area. This area has not improved in the business doing business compared to last year, nor did deteriorate. When obtaining a building permit, it is important to prevent unauthorized so-called black buildings. On the other hand, it is important for the overall development of the infrastructure to be efficient and time-consuming when obtaining a building permit (Table 3).

Table 3. Getting Building Permits category – Slovakia – DB2018

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedures (number)</td>
<td>10</td>
</tr>
<tr>
<td>Time (days)</td>
<td>286</td>
</tr>
<tr>
<td>Costs (% of the economy’s income per capita)</td>
<td>0,1</td>
</tr>
<tr>
<td>Quality Score index (0-15)</td>
<td>10</td>
</tr>
</tbody>
</table>

Source: own processing out of data from the World Bank Group (DB2018 report)

Connection of the company to the electricity grid category: When acquiring an electricity, the Slovak Republic placed it with points of 80.31 at 57th place. In the ranking of supply reliability and the transparent tariff index itself, the full score of eight out of eight was achieved. Acquisition of electricity requires a total of five procedures, namely sending a request together with a technical study and signed contract, which together takes 24
calendar days. This is followed by connecting to the grid for up to thirty calendar days. A further sixty days are waiting for the contractor to complete external work. The penultimate point is the conclusion of a contract with a retail supplier for three calendar days. The last point is the time slot for the connection of the electrometer in the length of seven calendar days. No new reforms have been approved in the last five years (Table 4).

**Table 4.** Connection to the electricity grid category – Slovakia – DB2018

<table>
<thead>
<tr>
<th>Indicator</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedures (number)</td>
<td>5</td>
</tr>
<tr>
<td>Time (days)</td>
<td>121</td>
</tr>
<tr>
<td>Costs (% of the economy’s income per capita)</td>
<td>50,8</td>
</tr>
<tr>
<td>Quality Score index (0-15)</td>
<td>8</td>
</tr>
</tbody>
</table>

*Source: own processing out of data from the World Bank Group (DB2018 report)*

Tax burden category: In the Doing Business 2018 ranking, the Slovak Republic was rated in paying taxes category by 79.26 points, which is more than a half percent worse than in the previous year. Slovakia overall rank in this category is 53th place (Table 5).

**Table 5.** Tax burden category – Slovakia – DB2018

<table>
<thead>
<tr>
<th>Indicator</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Payments (per year)</td>
<td>8</td>
</tr>
<tr>
<td>Time (hours per year)</td>
<td>192</td>
</tr>
<tr>
<td>Total rate (% of profit)</td>
<td>51,6</td>
</tr>
<tr>
<td>Evaluation of dossier submission (0-100)</td>
<td>87,17</td>
</tr>
</tbody>
</table>

*Source: own processing out of data from the World Bank Group (DB2018 report)*

**Conclusions**

Since the accession of the Slovak Republic to the EU in May 2004, export support, entrepreneurship and investment policy have grown. Following the introduction of the common currency in January 2009, when turbulence took place in the financial markets, one of the stabilizing anchors was created, which significantly reduced the level of business and investment uncertainty. It has also stabilized the inflow of foreign investment. The positive relationship between the business sector and the introduction of the Euro was mainly due to the expected benefits, including the reduction of transaction costs in international trade, price transparency, predictability and higher credibility in relation to foreign partners.

The quality of business environment monitoring in Slovakia points to the fact that the decisive areas determining the business objectives and decisions in practice include the area of financing of companies and capital, employment, unemployment and quality of human resources, social policy in the context of the functioning of the labor market and its legislation, business and tax policy in the context of public finance policy, market regulation, market entry and exit conditions, antitrust policy, subsidy and subsidy policy, licensing policy, certification and property registration system. All of these areas therefore have a significant impact on the business environment in Slovakia and hence on the volume of investments that Slovakia is targeting.

The Slovak market is small, but the great advantage of the Slovak Republic is its geographic location, which allows the supply of nearby markets of European countries. A strong investment incentive in the past was a relatively cheap labor force in Slovakia, which supported the FDI’s direction in particular in sectors with a lower added value but labor-intensive. It is possible that in the future some foreign investors will move their activities to countries with cheaper labor. However, many foreign investors are already connected with the Slovak economy (connection to the supply network, extent of investment in tangible fixed assets and human capital,
the importance of locating Slovakia in terms of supplying the surrounding markets, etc.) that even with some growth of wages or temporary changes in business conditions they would move from Slovakia away.

In terms of quality of the business environment, Slovakia is still an attractive investor target, but there are obstacles that investors can perceive very sensitively in the future and may be a competitive disadvantage for Slovakia as an investor target such as: judiciary, high rates of taxation, outflow of educated labor force abroad, and ethics of domestic companies.

Acknowledgements

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References


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INVESTIGATION OF THE ECONOMIC GROWTH, POVERTY AND INEQUALITY INTER-LINKAGES IN THE EUROPEAN UNION COUNTRIES

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Abstract. This paper has aimed to explore the inter-linkages of economic growth, poverty and inequality in the context of the European Union (EU) countries during the period of 2005 – 2016. Descriptive statistics analysis and econometric methods have been applied for this purpose. Research results have revealed statistically significant interrelationships between growth and poverty in half of the European Union countries. Moreover, in majority of these countries poverty has been elastic of economic growth. It should be noted, that the countries with higher level of economic development have relatively smaller share of population living below the national poverty lines. However, we cannot say the same about the growth – inequality relationships, which have varied across the EU countries. There are economically strong countries with relatively high income inequality and economically weaker countries with lower income distribution coefficients. However, in many cases poverty and income inequality tend to move in the same direction, i.e. as one increases, the other as well and vice versa. Finally, the insights of the research could be useful in developing a common strategy for smart, sustainable and inclusive growth and achieving the goals for Europe 2020.

Keywords: economic growth, poverty, income inequality, European Union.


JEL Classification: I30, I32, O40.

1. Introduction

Combating poverty is the central goal of development of economies all over the world. Economic growth is the most powerful instrument for reducing poverty. The primary lesson from the past 50 years of development research is that economic growth is the most effective way to pull people out of poverty (DFID, 2008). Much of the economic development studies (Fukuda, 2008; Odhiambo, 2009; Akanbi & Toit, 2011; Strulik, 2012; Uddin et al., 2014; Imai et al., 2014; Jencova et al., 2015; Kiaušienė, 2015; Limanli, 2015; Devarajan et al., 2015; Hassan et al., 2015; Bagchi & Svejnar, 2015; Moore et al., 2016; Fosu, 2017; Rakotondramaro & Andriamasy, 2016; Traverso, 2016; Škare & Družeta, 2016; Ozturk, 2016; Thorat et al., 2017; Iceland & Hernandez, 2017; Maksimov et al., 2017; Mikucka et al., 2017; Pietrzak et al. 2017; Tvaronavičienė, Gatautis, 2017; Diržytė et al., 2017) deal with how do poverty, on the one hand, and relative inequality, on the other hand, change with economic growth and how are these variables impacted by the characteristics of growth. A wide range of empirical studies on the relationships between economic growth and poverty have revealed that the growth is
associated with poverty reduction. Improving the quality of life, growth promotes to transform society, create jobs, drive human development, and generates virtuous circles of prosperity and opportunity (DFID, 2008). However, there is much less consensus supporting the empirical evidence for poverty having a causal impact on economic growth. Despite this, there are several theoretical arguments that link poverty to growth. On the one hand, citizens living below the poverty line have less money to spend, and this impacts on aggregate demand. On the other hand, that has negative effects on supply, which means less money for production, distribution and selling. Moreover, Rehorn (2014) has indicated five effects of poverty to growth. They are education, child development, crime, low social mobility and extra social spending. Through such channels poverty reduction may support economic growth. In turn, economic growth may effect on poverty reduction. So, the causality between growth and poverty can run in both directions. This means that efforts to reduce poverty can create virtuous cycles that raise economic growth, in turn reinforcing poverty reduction (Lustig et al., 2002). While economic growth has been cited as one of the main drivers behind the reduction of poverty, the increasing poverty in many countries has raised doubts about the efficiency of economic growth in its reduction (Perera & Lee, 2013). Economic research on the relationships among growth, poverty and inequality has held an important place. Some studies suggest that unequal distribution of income promotes economic growth. While others reveal that inequality hinders economic growth and contributes to increase poverty (Jihene & Ghazi, 2013). According to Barro (2000), income inequality in rich countries promotes economic growth, while in poor countries retards growth. High income inequality can slow the rate of poverty reduction and create social problems. Various studies have revealed different elasticities of poverty with respect to economic growth (Perera & Lee, 2013). Many authors have argued that income inequality is among the most pressing current problems (Rajan, 2010; Ncube et al., 2014). In addition, leading economists have considered growing inequality as one of the main causes of financial crisis. According to Ncube et al. (2014), the International Monetary Fund has published evidence that inequality led to the huge debts behind the 2008 banking crisis.

The European 2020 strategy promotes social inclusion, in particular through the reduction of poverty (Eurostat, 2017). In this strategy for smart, sustainable and inclusive growth, the fight against poverty has been one of the five measurable targets for 2020 (European Commission, 2010). The number of the European Union citizens living below the national poverty lines should be reduced by 25%, by aiming to lift at least 20 million people out of the risk of poverty and social exclusion (European Commission, 2010).

**Statement of the problem:** analyzing the relationships among economic growth, poverty and inequality, majority of the studies have been focused on poor and less developed countries. This study has attempted to fill in this gap by studying the relationships among these variables in the European Union countries.

**The object of the research:** inter-linkages of economic growth, poverty and inequality in the European Union countries. **The aim of the research:** this research attempts to provide more reliable estimates of the relationships among economic growth, poverty and inequality in the European Union countries during the period of 2005 – 2016. **Limitation of the research:** this study has been bounded by three indicators, such as economic growth (real GDP per capita), poverty (share of people living below the national poverty lines) and inequality (GINI coefficient). Other variables and relationships among them have not been considered in this paper. Moreover, this research has covered annual data from 2005 to 2016, i.e. available data presented by Eurostat. So, the period under review is not long and the results of the study reveal the situation in the short term. The actual results should be interpreted with some caution since the limited availability of data has impeded the systematic study of relationships among economic growth, poverty and inequality. However, despite the limitations, the results may be used as a first indication of the relationships among variables and provide general insights for sustainable economic development of the EU countries. The paper is divided into sections. Introduction presents theoretical background of relationships among economic growth, poverty and inequality. Section 2 reviews main approaches and studies on relationships among variables, also research methodology. Section 3 estimates relationships among indicators across the countries observed. The last section concludes summarizing the main insights.
2. Empirical evidence and research methodology

2.1. The overview of the studies on relationships among economic growth, poverty and inequality

The issue of inclusive growth has been on the top not only for the economically poor countries, such as India, Africa or Asia, but for the European countries as well. In the strategy Europe 2020, the fight against poverty has been one of the five measurable targets. Over the last ten years, many scientists (Odhiambo, 2009; Akanbi & Toit, 2011; Strulik, 2012; Imai et al., 2014; Jencova et al., 2015; Devarajan et al., 2015; Bagchi & Svejnar, 2015; Moore et al., 2016; Traverso, 2016; Fosu, 2017) have explored the links among economic growth, poverty and inequality. Policy-makers in many countries wish to know whether a policy focused on growth is consistent with the goal of reducing poverty. Does economic growth impact on poverty reduction? (War, 2015).

According to Škare & Družeta (2016), despite advances in research, scientists have come up with different views at different times due to complexity of the subject-matter. The extent to which growth reduces poverty depends upon pace and pattern of growth, how the poverty is measured, and upon absorptive capacity of the poor. Also, the analysis has revealed, that as growth occurs poverty reduces, no matter the level of inequality. The scientists have concluded, that growth is good for poverty alleviation but it is not enough. Poverty reduction will not happen simply if the economy is growing (Škare & Družeta, 2016).

According to Ncube et al. (2014), the results of empirical studies on the impact of income inequality on economic growth have shown remarkable disparities, resulting in three dominant view today: 1) inequality plays a central role in determining the rate of growth and associates with lower growth rates; 2) inequality does lead to growth. It has a positive effect on growth; 3) there is no correlation at all or find inconclusive evidence of any correlation between inequality and economic growth. Attitudes on economic growth, poverty and inequality have changed over time, especially during the last decade. Škare & Družeta (2016) summarized all approaches and their changes over time. Referring to Škare & Družeta (2016), a chronological review of some important theoretical approaches have been revealed in Table 1.

<table>
<thead>
<tr>
<th>Year</th>
<th>Authors</th>
<th>Approaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>1953</td>
<td>Nurkse, R.</td>
<td><em>System of useful or evil circles.</em> Countries are poor because they have low savings and investments and they have low savings and investments because they are poor.</td>
</tr>
<tr>
<td>1955</td>
<td>Kuznets, S.</td>
<td><em>Kuznets inter-binding U-curve.</em> In the earlier stages of development, at middle-income levels, income inequality would grow until a turning point, when income distribution would become more even again and poverty would rapidly disappear under the influence of fairer distribution.</td>
</tr>
<tr>
<td>1960</td>
<td>Rostow, W.</td>
<td><em>Rostow’s upswing phase.</em> In the initial phases, when basic preconditions for growth are created and the various elements are aligned and completed, the economy will be able to begin its take-off.</td>
</tr>
<tr>
<td>1974</td>
<td>Chenery, H. et al.</td>
<td><em>Redistribution with growth; policies to improve income distribution in developing countries.</em> Although the average income per capita of developing countries has increased since 1960, it is obvious that such rapid growth has been of little benefit to a third of their population.</td>
</tr>
<tr>
<td>2004</td>
<td>Bourguignon, F.</td>
<td>The poverty growth-inequality triangle.</td>
</tr>
<tr>
<td>2011</td>
<td>Fosu, A. K.</td>
<td>Growth, inequality, and poverty reduction in developing countries.</td>
</tr>
</tbody>
</table>

*Source: table based on Škare & Družeta (2016)*
In the second half of the 20th century, two contentious approaches on the relationship between economic growth and poverty prevailed in the literature (Nindi & Odhiambo, 2015). The “trickle-down” view confirms that economic growth plays an essential role in poverty reduction in any country and it automatically eliminates poverty. In this case, the benefits of economic growth in a country trickle down to the poor and poverty reduction policies should be aimed at promoting economic growth. The “trickle-up” view states that economic growth does not improve the lives of the very poor, but tends to “trickle-up” to the middle classes and the very rich. This impacts on income inequality, which then increases poverty (Nindi & Odhiambo, 2015; Škare & Družeta, 2016). According to Meier & Stiglitz (2001), today as billions of citizens still live in poverty, it becomes obvious that the “trickle-down” theory must be supplemented by policies of inclusion that lessen sharp inequality in incomes, enhancing human capital accumulation and employment opportunities, which help in providing safety for the more vulnerable part of society (Škare & Družeta, 2016).

Over the last decade, three methodological approaches can be found in the scientific literature regarding relationship between economic growth and poverty (Warr, 2015). A first approach – general equilibrium modeling – focuses on causal relationships between variables and their impacts on ones. A second approach relies on household survey data in order to construct the distribution of real expenditures across households and to examine the relationships among variables. A third approach includes statistical data on changes in poverty and growth and its composition (Warr, 2015).

The main insights of the most important recent studies have been revealed below. Odhiambo (2009) examined the dynamic causal relationship between financial development, economic growth and poverty reduction in South Africa. The empirical results of the study have shown that both financial development and economic growth Granger cause poverty reduction. The study also has found that economic growth Granger causes financial development and leads in the process of poverty reduction in South Africa. The study has recommended that policies geared towards increasing economic growth should be intensified in order to reduce the high level of poverty prevailing in the country. According to Ncube et al. (2014), the empirical results have revealed that income inequality reduces economic growth and increases poverty in the Middle East and North Africa (MENA) regions. Using time series data of MENA countries for the period of 1985 – 2009, the researchers have found that income inequality levels significantly reduce economic growth that is one percentage change in income inequality would translate into a 0.57 percentage in economic growth. Thus, income inequality is very bad for the goal of higher and sustained economic growth (Ncube et al., 2014). Moreover, the study has indicated that income inequality levels significantly increase poverty that is one percentage change of income inequality would translate into a 0.78 percentage increase in poverty levels. In addition, among other factors increasing the poverty include foreign direct investment, population growth, inflation rate and primary education.

The study of Warr (2015) combined time-series and cross-country data for seven Mekong economies to examine the causes of poverty reduction, particularly the role of aggregate economic growth. The results of the study has confirmed that poverty reduction in the Mekong economies is strongly related to growth of real GDP per capita. In addition, it has been found that the sectoral composition of this growth affects the rate of poverty reduction. The author has revealed that services growth is an important source of poverty reduction in rural as well as urban areas. The study has concluded, that growth of value added in the most labor-intensive sectors may be the most poverty reducing. The services sector in the Mekong economies has been the most labor intensive, hence the most poverty reducing. The paper of Jencova et al. (2015) analyzed the problem of poverty from the statistical perspective of connections with unemployment and migration in the regions of Slovakia. The results have shown the significant dependencies in some regions, namely between the number of citizens living below the poverty line, the number of Slovak citizens working abroad and the number of unemployed persons. The authors have concluded poverty has been primarily an ethical problem with a large number of ethical issues at the macroeconomic context. While poverty is a general problem for the EU as a whole, it has an even greater impact on the overall development of the Slovak economy.

Kiaušienė (2015) performed comparative assessment of women unemployment and poverty in the EU coun-
tries. Although in many cases, it is most frequently highlighted that unemployment is one of the main reasons of poverty, but this study has shown that there exist strong direct interrelationships between variables not in all 28 countries of the European Union. Finally, women unemployment rate in the EU has been lower than men. However, women risk of poverty rate outweighs the indicator of men. Rakotondramaro and Andriamasy (2016) examined the causal relationships among tourism development, economic growth and poverty in Madagascar within a Granger framework. Findings have indicated the Granger causality running from tourism development and poverty to growth and from growth and poverty to tourism development. The authors have concluded, that neither growth nor tourism development Granger cause poverty in the case of Madagascar.

The study of Mikucka et al. (2017) analyzed the indicators of economic growth and income inequality for 46 countries, observed from 1981 to 2012. The results have indicated that in the long run economic growth improves subjective well-being when social trust does not decline and, in richer countries, when income inequality reduces. The researchers have concluded, that policy-makers should promote economic growth, protect and promote social trust, and reduce income inequality. Fosu (2017) presented comparative global evidence on the transformation of economic growth to poverty reduction in developing countries, with emphasis on the role of income inequality. The study has revealed that high initial levels of inequality limit the economic growth in reducing poverty while growing inequality increases poverty directly for a given level of growth. The author has recommended to accord special attention to reducing inequality in certain countries where income distribution is especially unfavorable. To conclude, the relationships among economic growth, poverty and inequality have been examined extensively in the scientific literature, but with contradicting results. The overview of the studies on relationships among variables has shown that majority of the investigations have focused on poor and less developed countries. Besides, only a few studies have examined the situation in some EU countries. Therefore, this research has attempted to fill in this gap by studying the relationships among the variables in the European Union countries.

2.2. Research methodology

In recent studies, various methodologies have been applied for the research of inter-linkages of economic growth, poverty and inequality. In the scientific studies, three groups of methods can be distinguished. The first group has been based on correlation and regression analysis (Hasan et al., 2009; Ncube et al., 2014; Kiaušienė, 2015; Jencova et al., 2015; Warr, 2015; Mikucka et al., 2017; Fosu, 2017), the second group has applied Granger causality techniques (Odhiambo, 2009; Akanbi, Toit, 2011; Jihene, Ghazi, 2013; Uddin et al., 2014; Nindi, Odhiambo, 2015; Rakotondramaro, Andriamasy, 2016) and the third one has employed other economic methods (elasticity; indexes, Generalized method of Moments, macro-economic modelling and others) (Hasan et al., 2009; Lenagala & Ram, 2010; Perera, Lee, 2013; Limanli, 2015; Fosu, 2017).

The study on inter-linkages of economic growth, poverty and inequality in the EU countries has been organized as follows:

Stage 1. The analysis of the descriptive statistics of economic growth, poverty and inequality indicators across the EU countries. Linkage analysis has been carried out among groups of countries by the level of economic development.

Stage 2. The investigation of the correlations between poverty and economic growth across the EU countries. Taking into consideration Jarque-Bera statistics (Jarque, Bera, 1987) confirming the normal distribution of the variables, the authors have used the Pearson’s correlation.

In order to be sure that the variables have been normally distributed, we have to check null hypothesis and alternative hypothesis:

Null hypothesis: normal distribution;
Alternative hypothesis: not normal distribution.
If probability value is ≤ 5%, null hypothesis should be rejected and accepted alternative hypothesis. Conversely, the null hypothesis is accepted if probability value is > 5%. All calculations have been based on Eviews v. 8.0

**Stage 3.** Calculations of growth elasticity of poverty. Growth elasticity of poverty is a measure of responsiveness that calculates how much poverty varies/changes for each percentage point in economic growth. The elasticity coefficient has been calculated as follows (Lenagala, Ram, 2010):

$$E_\beta = \frac{d(PR_{jt})}{d(RYPC_{jt})}$$  \hspace{1cm} (1)

Where: $d(PR_{jt})$ is the annual percentage change in poverty in country j over the period t, and $d(RYPC_{jt})$ denotes the annual rate of change of GDP per capita in country j during the period t.

**Stage 4.** Regression analysis has been focused on relationship between dependent variable and one or more independent variables.

**Data.** The analysis has focused on a sample of the 28 EU countries covering the period from 2005 to 2016. Analyzing the tendencies and the relationships among variables, there have been used the indicators of poverty and inequality, such as a share of citizens living at risk of poverty and GINI coefficient respectively; and the indicator of economic growth, such as real GDP per capita.

This research has been based on Eurostat annual data. It has provided a possibility to compare the European countries by the variables under consideration. The research consists of some steps which are presented in Fig. 1. All calculations have been made applying econometric software Eviews v. 8.0.

Next section has examined the tendencies of economic growth, poverty and inequality in the EU countries.
3. The analysis of the relations among economic growth, poverty and inequality

3.1. The examination of the main tendencies

In this section, the authors have investigated the main tendencies of poverty, inequality and economic growth indicators in the EU countries. The analysis covers the years 2005 – 2016.

Poverty and inequality in the context of economic growth. By average data of real GDP per capita, the EU countries have been grouped into six categories, such as countries with very high economic development level, high, upper middle, lower middle, low and very low (Table 2).

<table>
<thead>
<tr>
<th>Groups by the level of economic development /countries</th>
<th>Real GDP per capita, Eur.</th>
<th>People at risk of poverty, %</th>
<th>GINI, %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Very high level</strong></td>
<td>79 683</td>
<td>17.6</td>
<td>28.4</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>79 683</td>
<td>17.6</td>
<td>28.4</td>
</tr>
<tr>
<td><strong>High level</strong></td>
<td>40 961</td>
<td>18.9</td>
<td>27.0</td>
</tr>
<tr>
<td>Denmark</td>
<td>44 842</td>
<td>17.4</td>
<td>26.2</td>
</tr>
<tr>
<td>Ireland</td>
<td>40 900</td>
<td>26.5</td>
<td>30.6</td>
</tr>
<tr>
<td>Sweden</td>
<td>39 900</td>
<td>16.0</td>
<td>24.8</td>
</tr>
<tr>
<td>Netherlands</td>
<td>38 200</td>
<td>15.8</td>
<td>26.4</td>
</tr>
<tr>
<td><strong>Upper middle level</strong></td>
<td>33 075</td>
<td>19.8</td>
<td>28.4</td>
</tr>
<tr>
<td>Austria</td>
<td>35 700</td>
<td>18.5</td>
<td>27.1</td>
</tr>
<tr>
<td>Finland</td>
<td>35 075</td>
<td>17.1</td>
<td>25.8</td>
</tr>
<tr>
<td>Belgium</td>
<td>33 608</td>
<td>21.2</td>
<td>26.6</td>
</tr>
<tr>
<td>Germany</td>
<td>32 617</td>
<td>19.9</td>
<td>29.1</td>
</tr>
<tr>
<td>France</td>
<td>31 125</td>
<td>18.7</td>
<td>29.2</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>30 325</td>
<td>23.4</td>
<td>32.4</td>
</tr>
<tr>
<td><strong>Lower middle level</strong></td>
<td>24 214</td>
<td>26.4</td>
<td>32.1</td>
</tr>
<tr>
<td>Italy</td>
<td>26 833</td>
<td>27.2</td>
<td>32.2</td>
</tr>
<tr>
<td>Spain</td>
<td>23 267</td>
<td>26.1</td>
<td>33.4</td>
</tr>
<tr>
<td>Cyprus</td>
<td>22 542</td>
<td>25.9</td>
<td>30.8</td>
</tr>
<tr>
<td><strong>Low level</strong></td>
<td>17 138</td>
<td>22.6</td>
<td>29.1</td>
</tr>
<tr>
<td>Greece</td>
<td>19 475</td>
<td>31.6</td>
<td>33.9</td>
</tr>
<tr>
<td>Slovenia</td>
<td>17 758</td>
<td>18.7</td>
<td>23.9</td>
</tr>
<tr>
<td>Portugal</td>
<td>16 675</td>
<td>25.7</td>
<td>35.2</td>
</tr>
<tr>
<td>Malta</td>
<td>16 650</td>
<td>21.4</td>
<td>27.6</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>15 133</td>
<td>15.4</td>
<td>25.1</td>
</tr>
<tr>
<td><strong>Very low level</strong></td>
<td>9 637</td>
<td>22.6</td>
<td>32.1</td>
</tr>
<tr>
<td>Slovakia</td>
<td>12 583</td>
<td>21.4</td>
<td>25.2</td>
</tr>
<tr>
<td>Estonia</td>
<td>12 383</td>
<td>23.5</td>
<td>32.9</td>
</tr>
<tr>
<td>Croatia</td>
<td>10 642</td>
<td>30.4</td>
<td>30.7</td>
</tr>
<tr>
<td>Hungary</td>
<td>10 342</td>
<td>30.6</td>
<td>27.3</td>
</tr>
<tr>
<td>Lithuania</td>
<td>10 008</td>
<td>31.7</td>
<td>35.2</td>
</tr>
<tr>
<td>Latvia</td>
<td>9 617</td>
<td>36.5</td>
<td>36.1</td>
</tr>
<tr>
<td>Poland</td>
<td>9 517</td>
<td>29.6</td>
<td>31.6</td>
</tr>
<tr>
<td>Romania</td>
<td>6 442</td>
<td>41.8</td>
<td>35.1</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>5 200</td>
<td>48.2</td>
<td>34.9</td>
</tr>
</tbody>
</table>

Source: authors’ calculations based on Eurostat (2016a,b,c)

Using linkage analysis among groups of countries, some general tendencies have been revealed. Generally, it should be noted, on the one hand, the countries with higher level of economic development have relatively smaller share of population living below the national poverty lines. However, on the other hand, we cannot say the same about the GINI coefficient, which is a measure of income inequality. The relationships between economic development and GINI have varied across the EU countries. There are economically strong countries such as Luxembourg, Ireland, Germany, France, and United Kingdom with relatively high income inequality and economically weaker countries, such as Hungary, Slovakia, Slovenia, and Malta with lower income distri-
bution coefficient. Moreover, in majority of the EU countries poverty and income inequality tend to move in the same directions, i.e. as one decreases, the other also tends to decrease and vice versa.

Descriptive statistics. Table 2 supplements the information in Table 1 and at the same time shows that the most homogeneous group of the EU countries in terms of economic development is the group of countries with low level of GDP per capita. Greece, Slovenia, Portugal, Malta and Czech Republic belong to this group. However, in terms of poverty and inequality the most homogeneous groups of countries are with very high and lower middle level of economic development.

**Table 2.** Descriptive statistics of economic growth, poverty and inequality variables

<table>
<thead>
<tr>
<th>Groups of countries by the level of economic development</th>
<th>Variables</th>
<th>Min</th>
<th>Max</th>
<th>Average</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Very high level (Luxembourg)</strong></td>
<td>Real GDP per capita, Eur.</td>
<td>76500</td>
<td>84400</td>
<td>79683</td>
<td>2377</td>
</tr>
<tr>
<td><strong>High level (Denmark, Ireland, Sweden, Netherlands)</strong></td>
<td>People at risk of poverty, %</td>
<td>15.5</td>
<td>19.7</td>
<td>17.6</td>
<td>1.32</td>
</tr>
<tr>
<td></td>
<td>GINI, %</td>
<td>26.5</td>
<td>31.0</td>
<td>28.4</td>
<td>1.31</td>
</tr>
<tr>
<td><strong>Upper middle level (Austria, Finland, Belgium, Germany, France, United Kingdom)</strong></td>
<td>Real GDP per capita, Eur.</td>
<td>36300</td>
<td>53600</td>
<td>40960</td>
<td>3798</td>
</tr>
<tr>
<td></td>
<td>People at risk of poverty, %</td>
<td>13.9</td>
<td>30.3</td>
<td>18.8</td>
<td>4.61</td>
</tr>
<tr>
<td></td>
<td>GINI, %</td>
<td>23.4</td>
<td>31.9</td>
<td>26.9</td>
<td>2.41</td>
</tr>
<tr>
<td><strong>Lower middle level (Italy, Spain, Cyprus)</strong></td>
<td>Real GDP per capita, Eur.</td>
<td>29100</td>
<td>37300</td>
<td>33075</td>
<td>2166</td>
</tr>
<tr>
<td></td>
<td>People at risk of poverty, %</td>
<td>16.0</td>
<td>24.8</td>
<td>19.8</td>
<td>2.18</td>
</tr>
<tr>
<td></td>
<td>GINI, %</td>
<td>25.2</td>
<td>34.6</td>
<td>28.4</td>
<td>2.43</td>
</tr>
<tr>
<td><strong>Low level (Greece, Slovenia, Portugal, Malta, Czech Republic)</strong></td>
<td>Real GDP per capita, Eur.</td>
<td>20400</td>
<td>28700</td>
<td>24214</td>
<td>2240</td>
</tr>
<tr>
<td></td>
<td>People at risk of poverty, %</td>
<td>23.3</td>
<td>29.9</td>
<td>26.4</td>
<td>1.94</td>
</tr>
<tr>
<td></td>
<td>GINI, %</td>
<td>28.7</td>
<td>34.8</td>
<td>32.1</td>
<td>1.71</td>
</tr>
<tr>
<td><strong>Very low level (Slovakia, Estonia, Croatia, Hungary, Lithuania, Latvia, Poland, Romania, Bulgaria)</strong></td>
<td>Real GDP per capita, Eur.</td>
<td>13600</td>
<td>22700</td>
<td>17138</td>
<td>1988</td>
</tr>
<tr>
<td></td>
<td>People at risk of poverty, %</td>
<td>13.3</td>
<td>36.0</td>
<td>22.5</td>
<td>6.03</td>
</tr>
<tr>
<td></td>
<td>GINI, %</td>
<td>22.7</td>
<td>38.1</td>
<td>29.1</td>
<td>4.72</td>
</tr>
</tbody>
</table>

Source: author’s calculations based on Eurostat (2016a, b, c)

In order to assess the economic growth – poverty relationships, the Pearson’s correlation has been used. Before applying this, we need to make sure the variables are normally distributed. To this end, Jarque-Bera statistics has been employed.

Jarque-Bera statistics: checking of distribution. Jarque-Bera statistics has shown that the variables are normally distributed (Annex A). We have checked two hypotheses: null hypothesis that variables are normally distributed and alternative hypothesis that variables are not normally distributed. The null hypothesis is rejected if probability associated to Jarque-Bera statistics is ≤0.05. Conversely, the null hypothesis is accepted if the associated probability is >0.05. All calculations have been based on Eviews v. 8.0. As the variables under consideration are normally distributed, we can use the Pearson’s correlation.

Correlation analysis. The results of correlation analysis across the EU countries have been presented in Table 3.
Table 3. Pearson’s correlation between poverty and economic growth

<table>
<thead>
<tr>
<th>Groups of countries</th>
<th>Correlation coefficient</th>
<th>t stat</th>
<th>Groups of countries</th>
<th>Correlation coefficient</th>
<th>t stat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very high level</td>
<td></td>
<td></td>
<td>Lower middle level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luxembourg</td>
<td>-0.25</td>
<td>0.81</td>
<td>Italy</td>
<td>-0.69</td>
<td>3.02</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Spain</td>
<td>-0.73</td>
<td>3.37</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cyprus</td>
<td>-0.89</td>
<td>6.11</td>
</tr>
<tr>
<td>High level</td>
<td></td>
<td></td>
<td>Low level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td>-0.71</td>
<td>3.18</td>
<td>Greece</td>
<td>-0.93</td>
<td>8.16</td>
</tr>
<tr>
<td>Ireland</td>
<td>-0.21</td>
<td>0.67</td>
<td>Slovenia</td>
<td>-0.30</td>
<td>1.01</td>
</tr>
<tr>
<td>Sweden</td>
<td>0.66</td>
<td>2.77</td>
<td>Portugal</td>
<td>-0.54</td>
<td>2.04</td>
</tr>
<tr>
<td>Netherlands</td>
<td>-0.13</td>
<td>0.42</td>
<td>Malta</td>
<td>0.36</td>
<td>1.24</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Czech Republic</td>
<td>-0.78</td>
<td>3.94</td>
</tr>
<tr>
<td>Upper middle level</td>
<td></td>
<td></td>
<td>Very low level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td>0.38</td>
<td>1.30</td>
<td>Estonia</td>
<td>0.13</td>
<td>0.41</td>
</tr>
<tr>
<td>Finland</td>
<td>0.48</td>
<td>1.74</td>
<td>Slovakia</td>
<td>-0.89</td>
<td>3.91</td>
</tr>
<tr>
<td>Belgium</td>
<td>-0.39</td>
<td>1.35</td>
<td>Croatia</td>
<td>-0.55</td>
<td>2.08</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>-0.02</td>
<td>0.07</td>
<td>Hungary</td>
<td>-0.60</td>
<td>2.34</td>
</tr>
<tr>
<td>Germany</td>
<td>0.43</td>
<td>1.51</td>
<td>Lithuania</td>
<td>-0.69</td>
<td>2.99</td>
</tr>
<tr>
<td>France</td>
<td>-0.35</td>
<td>1.18</td>
<td>Latvia</td>
<td>-0.89</td>
<td>6.30</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Poland</td>
<td>-0.95</td>
<td>9.42</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Romania</td>
<td>-0.77</td>
<td>3.80</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bulgaria</td>
<td>-0.87</td>
<td>5.49</td>
</tr>
</tbody>
</table>

Source: author’s calculations based on Eurostat (2016a,b,c)

As Table 3 has presented, a negative statistically significant relationship between poverty and economic growth has been detected in thirteen EU countries, such as Denmark, Italy, Spain, Cyprus, Greece, Czech Republic, Slovakia, Hungary, Lithuania, Latvia, Poland, Romania and Bulgaria. It has shown that as the economy of certain country grows, poverty decreases and vice versa. Besides, a positive statistically significant relationship between variables has been identified in Sweden. It means that as economy grows, the share of population living below the national poverty line tends to increase. The remaining countries have had statistically insignificant correlation between poverty and economic growth. These countries have been excluded from the further investigation. Summarizing these results, it can be stated that across the European Union countries correlation varies from a very weak (United Kingdom) to a very strong (Poland), however, only half of the countries have had statistically significant relationships between poverty and economic growth. In the next section, these countries have been analyzed in more detail.

3.2. The dependence of the variables

Growth elasticity of poverty. To measure the responsiveness how much poverty changes for each percentage point in economic growth, we have calculated elasticity of poverty with respect to economic growth. Table 4 contains the elasticities.
Table 4. Growth elasticities of poverty

<table>
<thead>
<tr>
<th>Countries</th>
<th>Average annual change in 2005-2016</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Poverty, %</td>
<td>GDP per capita, %</td>
<td>Elasticity</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>4.14</td>
<td>2.88</td>
<td>1.44</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>3.52</td>
<td>1.78</td>
<td>2.00</td>
</tr>
<tr>
<td>Denmark</td>
<td>0.27</td>
<td>0.28</td>
<td>0.96</td>
</tr>
<tr>
<td>Greece</td>
<td>1.74</td>
<td>1.82</td>
<td>0.96</td>
</tr>
<tr>
<td>Spain</td>
<td>1.26</td>
<td>0.12</td>
<td>10.5</td>
</tr>
<tr>
<td>Italy</td>
<td>1.41</td>
<td>0.71</td>
<td>1.99</td>
</tr>
<tr>
<td>Cyprus</td>
<td>0.82</td>
<td>0.65</td>
<td>1.26</td>
</tr>
<tr>
<td>Latvia</td>
<td>4.41</td>
<td>2.78</td>
<td>1.59</td>
</tr>
<tr>
<td>Lithuania</td>
<td>2.80</td>
<td>3.69</td>
<td>0.76</td>
</tr>
<tr>
<td>Hungary</td>
<td>1.81</td>
<td>1.20</td>
<td>1.51</td>
</tr>
<tr>
<td>Poland</td>
<td>6.60</td>
<td>3.64</td>
<td>1.81</td>
</tr>
<tr>
<td>Romania</td>
<td>2.13</td>
<td>2.44</td>
<td>0.87</td>
</tr>
<tr>
<td>Slovakia</td>
<td>5.17</td>
<td>3.53</td>
<td>1.46</td>
</tr>
<tr>
<td>Sweden</td>
<td>2.18</td>
<td>1.11</td>
<td>1.96</td>
</tr>
</tbody>
</table>

Source: author’s calculations based on Eurostat (2016a,b)

To make the table self-contained, rates of poverty have been shown along with the rates of real GDP per capita and the corresponding elasticities for each country examined. The table suggests several significant points. First, it is interesting to note that in majority of the countries poverty has been elastic of economic growth. In general, the growth of GDP per capita has effect on poverty reduction. Second, elasticities have varied across the countries. Growth elasticity of poverty in Spain is considerably higher than this in other countries. Third, the lower elasticities (inelastic poverty) may suggest growth to have been less pro-poor during the period studied. The estimates reveal the low response of poverty to GDP per capita growth in Denmark, Greece, Lithuania and Romania.

Fourth, the calculation has not hold income inequality constant, but assumes that projected changes will be the same as those observed over the period analyzed. However, the growth elasticity of poverty also depends on other variables, among them the level of income inequality. Many scientific studies have revealed that countries with a more equal distribution of income experience a greater reduction in the poverty rate for a given increase in GDP per capita. Another step of the analysis is to assess the impact of income inequalities on poverty.

The effect of income inequality on poverty. The regression statistics has shown that not in all cases the dependence between poverty and income inequalities can be expressed by linear regression. Statistically significant effect of inequality on poverty has been detected in Bulgaria, Czech Republic, Denmark, Spain, Greece, Italy, Poland and Sweden (Table 5). In the cases of Cyprus, Latvia, Lithuania, Hungary, Romania and Slovakia, the regression coefficients turned out to be insignificant. Moreover, the results have indicated that income inequality levels indeed significantly increase poverty in Czech Republic, Greece, Italy and Poland.
Table 5. The effect of income inequality on poverty

<table>
<thead>
<tr>
<th>Regression statistics</th>
<th>Coefficients/values</th>
<th>Regression statistics</th>
<th>Coefficients/values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulgaria</strong></td>
<td></td>
<td><strong>Spain</strong></td>
<td></td>
</tr>
<tr>
<td>Multiple R</td>
<td>0.65</td>
<td>Multiple R</td>
<td>0.97</td>
</tr>
<tr>
<td>R Square</td>
<td>0.43</td>
<td>R Square</td>
<td>0.94</td>
</tr>
<tr>
<td><em>F</em></td>
<td>6.70**</td>
<td><em>F</em></td>
<td>168.64*</td>
</tr>
<tr>
<td>Intersect /p-value</td>
<td>132.38*</td>
<td>Intercept</td>
<td>-35.03*</td>
</tr>
<tr>
<td>Income inequality</td>
<td>-2.41**</td>
<td>Income inequality</td>
<td>1.83*</td>
</tr>
<tr>
<td><strong>Czech Republic</strong></td>
<td></td>
<td><strong>Italy</strong></td>
<td></td>
</tr>
<tr>
<td>Multiple R</td>
<td>0.74</td>
<td>Multiple R</td>
<td>0.70</td>
</tr>
<tr>
<td>R Square</td>
<td>0.55</td>
<td>R Square</td>
<td>0.49</td>
</tr>
<tr>
<td><em>F</em></td>
<td>11.87*</td>
<td><em>F</em></td>
<td>9.73*</td>
</tr>
<tr>
<td>Intersect</td>
<td>-76.96**</td>
<td>Intercept</td>
<td>-58.35**</td>
</tr>
<tr>
<td>Income inequality</td>
<td>3.68*</td>
<td>Income inequality</td>
<td>2.65*</td>
</tr>
<tr>
<td><strong>Denmark</strong></td>
<td></td>
<td><strong>Poland</strong></td>
<td></td>
</tr>
<tr>
<td>Multiple R</td>
<td>0.55</td>
<td>Multiple R</td>
<td>0.98</td>
</tr>
<tr>
<td>R Square</td>
<td>0.30</td>
<td>R Square</td>
<td>0.96</td>
</tr>
<tr>
<td><em>F</em></td>
<td>4.42***</td>
<td><em>F</em></td>
<td>240.38*</td>
</tr>
<tr>
<td>Intersect</td>
<td>10.61*</td>
<td>Intercept</td>
<td>-109.36*</td>
</tr>
<tr>
<td>Income inequality</td>
<td>0.26***</td>
<td>Income inequality</td>
<td>4.39*</td>
</tr>
<tr>
<td><strong>Greece</strong></td>
<td></td>
<td><strong>Sweden</strong></td>
<td></td>
</tr>
<tr>
<td>Multiple R</td>
<td>0.73</td>
<td>Multiple R</td>
<td>0.93</td>
</tr>
<tr>
<td>R Square</td>
<td>0.53</td>
<td>R Square</td>
<td>0.86</td>
</tr>
<tr>
<td><em>F</em></td>
<td>11.26*</td>
<td><em>F</em></td>
<td>59.92*</td>
</tr>
<tr>
<td>Intersect</td>
<td>-118.22**</td>
<td>Intercept</td>
<td>-9.85*</td>
</tr>
<tr>
<td>Income inequality</td>
<td>4.42*</td>
<td>Income inequality</td>
<td>1.04*</td>
</tr>
</tbody>
</table>

Note: *, **, *** indicate significance at 1%, 5% and 10% respectively.

Source: authors’ calculations based on Eviews v. 8.0

We have found that a one percentage point change in income inequality would increase poverty levels in Czech Republic (3.68 percentage points), Greece (4.42 percentage points), Italy (2.65 percentage points) and Poland (4.39 percentage points). Besides, the analysis has revealed opposite effect of income inequality on poverty in Bulgaria. In this case, increase in income inequality impacts on poverty reduction. Moreover, 94 percent, 96 percent and 86 percent of the variation in poverty can be explained by income inequality in Spain, Poland and Sweden respectively.

Next section summarizes and discusses the main results of the research.

Conclusions and discussion

The main objective of this research is to examine inter-linkages of economic growth, poverty and inequality in the European Union countries. Analyzing the relationships among economic growth, poverty and inequality, majority of the studies have been focused on poor and less developed countries. This study has attempted to fill in this gap by studying the relationships among these variables in the European Union countries. The actual results should be interpreted with some caution since the limited availability of data has impeded the systematic study of relationships among variables. However, despite the limitations, the results may be used as a first indication of the relationships among variables and provide general insights for sustainable economic development of the EU countries.
Using linkage analysis among groups of countries by the level of economic development, some general tendencies have been revealed. Generally, it should be noted, on the one hand, the countries with higher level of economic development have relatively smaller share of population living below the national poverty lines. However, on the other hand, we cannot say the same about the income inequality. The relationships between economic growth and income inequality have varied across the EU countries. However, in majority of the EU countries poverty and income inequality tends to move in the same directions, i.e. as one decreases, the other also tends to decrease and vice versa. Research results have revealed statistically significant interrelationships between growth and poverty in half of the European Union countries. Moreover, in majority of these countries poverty has been found elastic of economic growth. This has confirmed that poverty reduction in majority of the EU countries is strongly related to growth of real GDP per capita. This finding supports earlier studies. Regression statistics has indicated that income inequality levels indeed significantly increase poverty in Czech Republic, Greece, Italy and Poland. Moreover, from 86 percent to 96 percent of the variation in poverty can be explained by income inequality in Spain, Poland and Sweden. These findings point to some key policy recommendations for higher economic growth and poverty reduction in the EU countries.

First, given the insight that inequality and poverty have been positively correlated in many countries, policy makers need to tackle this challenge head‐‐‐‐‐on. Second, given the finding that real GDP per capita reduces poverty in majority of EU countries, achieving higher national income must remain an active goal of governments. To increase per capita income, these countries must deepen macroeconomic and structural reforms.

Finally, it should be noted that the EU countries, while pursuing smart, sustainable and inclusive growth policies, must focus on poverty and inequality reduction. More importantly, increasing income inequality will hinder economic growth, and this could erode public trust in the country’s institutions.

To sum up, the previous scientific studies on the relationships among growth, poverty and inequality have shown remarkable disparities across the countries. Scientists have come up with different views at different times and countries. On the one hand, our results have been in line with other studies, such as Lenagala & Ram (2010), Ncube et al. (2014), Warr (2015), Mikucka et al. (2017). On the other hand, this research has extended the inter-linkages analysis among variables at the European Union level and revealed some insights into differences in the growth process.

References


Dirzytė, A.; Rakauskienė, O. G.; Servetkiēnė, V. 2017. Evaluation of resilience impact on socio-economic inequality, Entrepreneurship


### Annex A. Jarque-Bera statistics

<table>
<thead>
<tr>
<th>Countries</th>
<th>Variables</th>
<th>Jarque-Bera statistics</th>
<th>Probability</th>
<th>Test results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luxembourg</td>
<td>Real GDP per capita</td>
<td>0.521733</td>
<td>0.770384</td>
<td>Accepted</td>
</tr>
<tr>
<td></td>
<td>Poverty</td>
<td>0.648244</td>
<td>0.723162</td>
<td>Accepted</td>
</tr>
<tr>
<td>Denmark</td>
<td>Real GDP per capita</td>
<td>0.680043</td>
<td>0.711755</td>
<td>Accepted</td>
</tr>
<tr>
<td></td>
<td>Poverty</td>
<td>0.625241</td>
<td>0.731527</td>
<td>Accepted</td>
</tr>
<tr>
<td>Ireland</td>
<td>Real GDP per capita</td>
<td>5.166049</td>
<td>0.075545</td>
<td>Accepted</td>
</tr>
<tr>
<td></td>
<td>Poverty</td>
<td>1.031059</td>
<td>0.597184</td>
<td>Accepted</td>
</tr>
<tr>
<td>Sweden</td>
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**Source:** authors’ calculations based on Eviews v. 8.0.

**Note:** the level of significance is 5%.
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Dalia PRAKAPIENĖ is an assoc. professor of General Jonas Zemaitis Military Academy of Lithuania, Department of Management. Research interests include social media in management and education, ledership and development of professional and cross-cultural competencies.
WATER SECURITY: A SUMMARY OF KEY FINDINGS EXPLORING ISLANDS IN BRAZIL

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Abstract. This paper presents key findings from an ‘immersion’ that was undertaken in August 2017 on Paquetá and surrounding islands within the Amazon region of Brazil. In this research, immersion is understood as active participation in peoples’ lives over a period of time and supported by other methods including observation, semi-structured interviews and co-mapping. This research adapted the urban metabolism concept commonly used to assess levels of sustainability and resilience, for application to the context of peripheral river islands located in the Tocantins river near the Brazilian city of Belém. It specifically focuses on factors that impact on people’s behaviour in relation to water management, or what is described here as the ‘island water metabolism’. This includes geographic, seasonal, local governance and social dimensions as well as dependence on the rising and falling tides of the river.

Keywords: Water security; Water metabolism; Water management; Island metabolism; Immersion; Seasonality

Reference to this paper should be made as follows: Schiffer A.; Swan A, 2018. Water security: a summary of key findings exploring islands in Brazil, Security and Sustainability Issues 7(4): 855-860. https://doi.org/10.9770/jssi.2018.7.4(20)

JEL Classifications: 100, Z00, Z10

1. Introduction

The Brazilian government aims to ensure equitable access to safely managed drinking water for all by 2030 as part of its commitment to the United Nations Sustainable Development Goals (WASHWatch, 2017). While some progress has been made, a proportion of the population in both rural and urban areas continue to live without sufficient access (Grojec, 2017; Rocha et al. 2018; Cardoso et al. 2018; Muniz et al. 2018; Rivza, Kruzmetra 2017). The research examines the particular challenges of access to clean water on Paquetá and surrounding islands which are located in the Tocantins river on the periphery of Belém, the capital city of the Brazilian state Pará. The research makes use of the ‘urban metabolism’ concept which can be described as socio-technical, socio-economic and socio-ecological flows including water resources, people and information in, out and within the city (Currie & Musango, 2016; Kennedy, Cuddihy and Engel-Yan, 2007). Circular or zero-waste metabolisms are seen as sustainable and resilient (Agudelo-Vera, 2012) whereas linear metabolisms are understood as unsustainable and vulnerable (Klindworth et al., 2017; European Development Agency, 2015, p.26). In this paper, the aforementioned conceptual framework has been adapted to the ‘water metabolism’ of peripheral river islands and ‘island metabolisms’ more broadly.

¹ This research was supported by the project AguaSociaL an FP7-PEOPLE-2013-IRSES - Marie Curie Action “International Research Staff Exchange Scheme”, Grant Agreement Number 612633
2. Methodology

The author conducted a five-day immersion on Paquetá island in August 2017 in order to gain human insights into key factors that determine people’s behaviour in relation to the island water metabolism. This included visits to households on the neighbouring islands of Jutuba and Arapiranga. Immersion was enabled through an already established link between researchers at the Federal University of Pará and supported by a range of methods including observation, semi-structured interviews conducted with the help of a translator and co-mapping of infrastructure distribution. This study formed part of the wider AguaSocial project which has been described in other publications (Iorio et al., 2018).

A key limitation arises from the fact the immersion was relatively short but more importantly that it only covered one visit, thereby leading to potential ‘seasonal blindness’, a biased understanding of local life based on the limited insights gained from one season (Chambers, 2012, p.38). The author’s positionality as a female ‘outsider’ unable to freely converse in Portuguese should also be acknowledged (Merriam, 2001, pp.405-416).

3. Summary of key finding and discussion

3.1 Island life and the rising and falling tides of the Tocantins river

Paquetá is part of a small group of islands located where the waters of the Guajajará Bay meet the Tocantins river before they empty into the Atlantic Ocean approximately 100km to the North East. The distance between the mainland (Belém) and Paquetá is circa five kilometres. Behind the island the river stretches another 25 kilometres before it reaches the bank on the other side, which is technically the shore of a large river island (i.e. approximately the size of Switzerland).

The close proximity to the sea means the vast river which surrounds Paquetá and neighbouring islands is tidal. As such, individual and small clusters of households which are predominately located along the island shores and interior waterways are built on stilts. Raised walkways lead up from the river and connect clusters of buildings, or lead to separate toilet blocks that are located away from the main structures (Figure 1).

Figure 1. A raised walkway leading up to a house on stilts
(Note: when the tidy is high, the water reaches far beneath the building)

Source: Personal photo
The intra-island, inter-island and island-city networks which are the basis for economic and social activities are all dependent on access by boat. For example, this may include: going to school on Jutuba or Cotijuba; attending church on Arapiranga; accessing health care; or visiting friends and family on different parts of the island network. Similarly, transporting goods such as fuel or bottled water, fishing or collecting and selling açaí berries (a lucrative palm fruit supplied to Belém) require the use of a boat. In turn, these activities and the social and resource networks that sustain them form the island metabolism and are all dependent upon the rising and falling tides of the river that connects them.

3.2 Distribution of water infrastructure

Unlike the activities and public services listed above, the provision of drinking water has the potential to be independent from the tidal cycle of the river. The island of Cotijuba, which is more developed, has a borehole that supplies the island with drinking water, as well as grid electricity and road infrastructure. However, on Paquetá and other islands access to clean water remains a challenge. In these areas, the dispersed location of households means that off-grid solutions are likely to be the most appropriate solution for the provision of drinking water. This is already reflected by the widespread use of water infrastructure that collects river and/or rainwater at the household level. Those living on the islands of Arapiranga, Mucura and Onças depend on river water for decentralised supply at household level which is pumped into raised tanks and distributed using gravitational force. Discussions with the local community indicated that common health issues on Arapiranga include vomiting and diarrhea. It is likely that these problems are linked to the poor quality of their drinking water, though people across the islands also regularly come into contact with river water when they bathe in it.

Figure 2. Rainwater harvesting installation on Jutuba

Like Arapiranga, Mucura and Onças, households on Paquetá, Atos, Longa, Curubooca, Nova and Jutuba also have access to river water. However, in addition they have benefited from government subsidised rain water harvesting systems (Figure 2). Locally, rain is perceived to provide better water quality. Whether or not an island is served by rainwater harvesting infrastructure depends upon which municipal area they belong. Paquetá, Atos, Longa, Curuboooca, Nova and Jutuba (as well as Cotijuba) belong to the municipality of Belém, whereas the other islands mentioned fall under the governance of Bacarena (Figure 3). The respective influences of local authorities and other key stakeholders over the implementation of water infrastructure in this region has been explored within a recent study (Cardoso Castro et al., 2017).
Figure 3. Water infrastructure across islands and municipal borders (RH: rainwater harvesting; RW: river water; IB: island borehole.

Source: IBGE (2017)

It is evident that these administrative borders do not reflect the inter-island social networks that underpin island life. At first glance this may not appear particularly relevant, however these informal networks already support inter-island maintenance for other technologies and infrastructure development including repairs of boat engines and timber constructions.

3.3 Seasonal factors

During the time of the immersion exercise, local people across households on several islands described that there was insufficient rainfall to benefit from their rainwater harvesting installations. Instead they bought in bottles of water (Figure 4), temporarily rendering what could be a potentially circular system to provide clean drinking water into a linear system which depends on resources shipped in from the mainland. However, this coincided with the beginning of the açaí season which runs from August to January. Collecting açaí constitutes a major economic activity for people on Paquetá and neighbouring islands. Reportedly, açaí provides a good and reliable income unlike fishing which is the focus for the rest of the year. Therefore, the financial burden of buying in water, including fuel cost for transport, is lessened by lucrative economic activity when the açaí season and dry season overlap. The geographic location, particularly of households deep inside the interior waterways of islands such as Arapiranga, may also influence who is able to access bottled water as an alternative to river water. Here, the rising and falling tides as well as cost of diesel powered transport to cover longer-distances may be felt more severely than on the shores of Paquetá.
Figure 4. Bottled water supplements drinking water during periods of low rainfall.

Source: Personal photo

4. Conclusions and scope for further research

The research has highlighted that the island water metabolism is influenced by seasonal, geographic and local governance factors which impact on access to water resources. Undertaking immersions during different times of the year would lead to a more holistic understanding of water access including seasonal factors. While the supply of decentralised water has the potential to support a circular water metabolism on Paquetá and surrounding islands, the social networks that support island life in general should be also considered particularly in relation to maintenance and finance. Here, in-depth research into how islanders organise could lead to locally appropriate business models to support the long-term sustainability of infrastructure development beyond the borders of municipal areas. As such, the resilience of the water metabolism of one island should not be seen in isolation from the others.

Acknowledgements

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SUSTAINABILITY ISSUES: RIPARIAN VEGETATION AND ITS IMPORTANCE IN THE HYDROLOGICAL CYCLE IN AMAZONIAN ECOSYSTEMS¹

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Abstract. Deforestation and degradation of riparian forests have advanced significantly in the Amazon. This fact has drawn attention to its protection, especially since these forests are one of the fundamental components of the hydrogeochemical cycles and the hydrological cycle. The objective of this article is to analyze the importance of riparian vegetation in the protection of Amazonian water resources and to discuss the main changes/innovations of the New Forest Code related to PPAs. The new Brazilian Forest Code (Law 12.651, of May 25, 2012) defines the Permanent Preservation Area (PPA regions) as “protected area, covered or not by native vegetation, with the environmental function of preserving water resources, landscape, geological stability and biodiversity, as well as facilitating the gene flow of fauna and flora, protecting the soil and ensuring the well-being of human populations. “In the context of the New Forest Code, the main changes related to the Permanent Preservation Areas (PPAs), as well as the fragilities and threats to its integrity, and what is being done to mitigate the loss of vegetation cover in the Amazon.

Keywords: Sustainability Issues; Watershed Forests; Water Resources; Brazilian Forest Code; Amazon


JEL Classifications: Q23; Q25; Q28

1. Introduction

The Amazon biome plays an important role in the national and international scenario regarding to climatic issues. This is mainly due to its territorial extension and the enormous diversity of environments, including wetlands and biodiversity, with 53 large ecosystems. These ecosystems can be grouped into forest areas; typical Andean environments (near the highest springs of the basin); varzeas (floodplain vegetation); areas of tropical savannas and steppes. Among these environments, the most extensive are the humid forests of southwestern Amazonia, the humid forests of the Madeira-Tapajós regions and the humid forests of the Guyanas (Sayres et al., 2008).

¹ This research was supported by the project AguaSociaL an FP7-PEOPLE-2013-IRSES - Marie Curie Action “International Research Staff Exchange Scheme”, Grant Agreement Number 612633.
The Amazonian wetlands biomes are covered with several flood vegetation typologies, very rich in species and highly adapted to prolonged and deep floods (Inau, 2017). Despite the efforts of the scientific community, wetlands are still considered of little economic, ecological and/or social value in Brazil. This is evident in the debate about the new Forest Code, which completely ignores the ecological and socioeconomic importance of Humid Areas (HA) (Souza Jr. et al. 2011; Piedade et al. 2012; Junk et al. 2012; Rocha et al. 2018; Cardoso et al. 2018; Muniz et al. 2018). The discussion highlights gaps concerning the importance of HA by decision makers, as well as the absence of legal mechanisms for their adequate protection / conservation.

Varzea forests and floodplains usually have less diversity than terra-firme forests. They hold animals and plants adapted to seasonal hydrological conditions. The smaller diversity of this type of vegetation occurs because there are few species that have morpho-physiological mechanisms that support the seasonal flooding rhythm (Ferreira & Stohlgren, 1999). Riparian forests and vegetation mosaics in hydrographic basins are one of the fundamental components of the hydro-geochemical and hydrological cycles (Tundisi and Tundisi, 2010). The removal of these forests has considerable impacts on water quality and on the environmental services of aquatic ecosystems (Tucci and Mendes, 2006).

The set of ecological processes supported by riparian forests has fundamental economic components, such as renewal of water quality; the control and recharge of aquifers; water replenished by evapotranspiration and in the control of sedimentation of aquatic ecosystems. All these factors reflect the processes of water volume preservation. In addition, they act in the supply of organic matter for fauna and stock keeping, diversity, and refuge of the fauna, besides being constituted in a breeding area (Tundisi and Tundisi, 2008). Deforestation and degradation of riparian forests have advanced significantly in the Amazon. This has raised awareness of their protection, especially as these forests protect water, a resource that is becoming scarce in the world. Large expanses of riparian forests are destroyed by the development of cities, deforestation for timber extraction, use in cutting-to-subsistence agriculture and ranching, due to the high fertility of their soil and easy access (Junk et al., 2000). In addition, anthropic activity in these areas leads to enormous socioeconomic and environmental damages (Zelarayán et al., 2015).

Concern over the conservation and restoration of riparian vegetation cover is relatively recent in Brazil and has been the subject of wide and frequent discussions. Current legislation addresses technical-scientific and conservationist issues. The importance of the forests along the rivers is based on the diverse benefits that this type of vegetation brings to the ecosystem, exerting a protective function on all the natural, biotic and abiotic resources. According to Tambosi et al. (2015), the presence of vegetation, particularly of riparian forests, supports a series of eco-hydrological functions, since this vegetation provides a suitable microclimate for the aquatic environment, reducing the incidence of increasing the thermal stability of the aquatic environment.

The functions of riparian vegetation also guarantee greater stability in different physicochemical parameters of water, besides reducing the risk of eutrophication. Therefore, it favors the maintenance of water quality and possible treatment costs for human use (Casatti, 2010; Tundisi & Tundisi, 2010; Tundisi, 2014; Rivza, Kruzmetra, 2017). In this context, this article aims to analyze the importance of riparian vegetation in the protection of Amazonian water resources, as well as to discuss the main changes/innovations of the new Forest Code related to PPA. Considering that the same, among other determinations, began to demand the presence of vegetation on the banks of rivers, lakes and streams, and the recovery of degraded areas. In the section two it is discussed the importance of Permanent Preservation Areas in different biomes according to the different types of vegetation cover. Section three addresses the implications of the new forest codes to small holder and landowner of large proprieties. It is also discussed different points of view from environmentalists to landowners. Section four points out the fragility and threatens the integrity of the permanent preservation areas. Finally, it is explained what the Ministry of Environment has done to mitigate the threats of these important protected areas through the PLANAVEG (project to restore deforested areas in all Brazilian biomes).
2. Permanent Preservation Areas (PPAs) and their importance.

The new Brazilian Forest Code (Law 12.651, dated May 25th, 2012) defines a Permanent Preservation Area (PPA) as “protected area, covered or not by native vegetation, with the environmental function of preserving water resources, landscape, geological stability and biodiversity, as well as facilitating the gene flow of fauna and flora, protecting the soil and ensuring the well-being of human populations. PPAs are identified in rural and urban areas as sensitive land areas, such as the marginal ranges of any perennial and intermittent natural watercourse; areas around lakes and natural lagoons; the areas surrounding artificial water reservoirs resulting from the damming or dykes of natural water courses; the areas around the springs and perennial water springs, whatever their topographical situation; the tops of hills; slopes with slopes greater than 45 °; the seashore creeping vegetation (“restingas”) and dunes, the mangroves and the borders of plateau and sandbanks in a river (Federal Law no. 12.651 - Brazilian Forest Code). PPAs are essential for the maintenance of water resources. The presence of vegetation, and in particular of forests in these riparian areas, provides a series of eco-hydrological functions, directly influencing the physical-chemical and biological parameters of water bodies (Tambosi et al., 2015). Despite this, PPAs are currently subject to large extensions of degradation due to the intensification of anthropogenic pressures on the environment. As a result, there is a process of replacing natural landscapes with other uses and land occupations and the conversion of forest cover areas into forest fragments, compromising the environment and, in many cases, affecting the availability of important natural resources to life (Moreira et al., 2015).

3. What does the Law say about Permanent Preservation Areas (PPAs)?

In order to strengthen the protection of water resources, the Brazilian Forestry Law establishes the need for the presence of Permanent Preservation Areas, as well as their recovery and conservation. However, over the years, Brazilian Environmental Legislation has undergone changes, the main one being the creation of Law 12.651 of May 25, 2012, which became known as the “New Brazilian Forest Code”, replacing the “1965 Forest Code. The “New Forest Code” has been harshly criticized by environmentalists, especially regarding changes in the preservation and recovery of APPS.

One of the main changes that occurred was the reduction of protected areas. The new law includes the areas of PPAs in the calculation of the Legal Reserve of rural properties (80% of the territory must be covered by forest in Amazon region). This measure made the calculation of the PPAs size more flexible with respect to the starting point for the delimitation of the marginal strip to the watercourses. In the 1965 code, the extent of the area to be preserved (APP) was delimited from the highest level of the rivers (highest seasonal bed), including flood areas at times of floods, varying according to the width of the water course. With the creation of the new forest code, PPA was delimited by the regular river bed and the recovery of riparian vegetation or riparian forests in small properties (up to four fiscal modules) began to vary according to the size of the property. The range to be recomposed ranges from 5 to 15 m. Properties with more than four fiscal modules, the range to be preserved ranges from 30 to 500 m. For Tambosi et al. (2015), this change has a double effect: (i) it reduces the width of the river (which formerly included the annual floodplain), so that the width of the protection range can be reduced; and ii) it reduces the protection of floodplain forest areas, especially in rivers with broad floodplains (as is the case with several rivers and in the Amazon). The authors also point out that with the new Forest Code riparian PPAs will protect only part of the floodplain areas, which is particularly serious since floodplains play important ecosystem and hydrological functions. In addition to attenuating the erosive forces of surface runoff of rainwater, floodplains help control floods and water quality, are fundamental in aquifer recharge, and still exert an ecological function - they are systems of transition between terrestrial and aquatic ecosystems, among others (Tundisi and Tundisi, 2010; Silva et al., 2012).

Protection of springs is another important difference between the “Old” and the “New” Forest Code. The 2012 Forest Code only covers perennial springs. The protection of intermittent springs and the marginal ranges of ephemeral watercourses were excluded. According to Tambosi et al. (2015), this threatens several springs and watercourses and, consequently, jeopardizes the protection of water resources, particularly in more susceptible areas where the climate is drier.
One of the points criticized in the new code is the amnesty of fines for producers who have deforested their protected areas (PPAs and Legal Reserve) until July 22, 2008 (date of the decree that regulates the Environmental Crimes Law - Law 9,605 of December 12, 2008). February 1998). For some environmentalists, this amnesty creates a legal precedent and insecurity that encourages deforestation. Those who commit environmental crimes may be forgiven of their penalties (Orenstein, 2017). In addition, in the 1965 forest code, all areas of PPA (Riparian forests) occupied by anthropic activity should be restored / recovered with native vegetation. In the “New Forest Code”, the PPAs with use already consolidated until July 22, 2008 have to be recovered, but not in their entirety. The extent of the PPA to be recovered varies according to the size of the property in fiscal modules, the type of PPA and the width of the water bodies. As established in the new code, areas to be restored along the banks of rivers, lakes, ponds and footpaths diminish as the size of the property decreases. There is also a maximum value of 10% for properties less than two fiscal modules and 20% between two and four fiscal modules (Federal Law 12.651 / 2012). This reduction of the areas to be restored, together with the non-requirement of restoration of the hilltop and hillside PPAs, may reduce the potential of these areas to provide all eco-hydrological services. They are essential for both the provision and the quality of water for human use (Tambosi et al., 2015).

One of the positive aspects of the “New Forest Code” was the creation of the Rural Environmental Registry (CAR-Acronym in Portuguese language). It is mandatory for all rural properties in Brazil, being the first step in the process of environmental regularization of private lands. The CAR includes all environmental information of rural properties and appropriations, such as PPAs and Legal Reserve areas, with geo-referenced data and landowner information. The owner who does not register his rural property loses the opportunity of environmental regularization under the conditions and terms offered by Law 12.651. They will lose the opportunity of the suspension of the notices and fines received before July 22, 2008. The same will be prevented from receiving agricultural credit from financial institutions, as well as from marketing its land. In the process of buying and selling rural properties, the environmental liability must be legalized. Since the enactment of the New Forest Code, CAR is the most concrete result of the law. As of April 30, 2017, 4.1 million rural properties had been registered in the CAR, representing a total of 408 million hectares (Orenstein, 2017).

Farmers who join the CAR are well-regarded both in the agricultural sector of the economy and as well by environmentalists. Rural properties registered in the CAR with environmental liabilities - PPAs and altered / deforested legal reserves may join the PRA (Environmental Regularization Program). The PRA allows the states to guide and accompany the rural producers in the elaboration and implementation of the actions necessary for the recovery of areas with environmental liabilities. However, as it depends on the investment of each state of the Brazilian Federation, the PRA is not yet fully established in all regions of Brazil. One of the most expected by agrarian sectors and environmentalists, but still far from working in practice is the CRA (Environmental Reserve Quota). It is a title that can be issued to anyone who has a Legal Reserve area surplus. The landowner can negotiate this forest asset with another producer who has insufficient reserves. These shares would be traded on the Stock Exchange (Orenstein, 2017). This share is interesting from the point of view of the preservation of biodiversity, since water resources are inefficient. This policy does not take into account river basins. This may in the future mean some basins with a percentage of vegetation cover lower than that recommended for the maintenance of water resources. Otherwise, other basins would receive more quotas, and would have a greater integrity of the vegetal resources. There would therefore be an imbalance in the uniformity of landscapes.

Due to these major changes, the debate on the new Forest Code has intensified. However, one does not believe in a setback, but in a new way. Since the new Forest Code does not only consider environmental issues, but also economic and social aspects. The new code allows the continuity of economic activities in part of the PPAs already consolidated until 07/22/2008. Thus, the restoration of the vegetation in the legal reserve areas will be possible to intercalate native species with fruit trees in an agroforestry system. This allows a change of attitude of farmers and rancher as it can be an incentive to recover their degraded areas. It combines ecological balance and a future economic return. In this way, the country could reach a sustainable development in balance of environment conservation policies (Stjepanović et al. 2017).
4. Fragility and threats to the integrity of PPAs

Anthropogenic activities of various types have increased in the last fifty years in the Amazon Basin. Large areas of lowland and terra-firme forests have already been deforested for forest exploitation, agricultural and livestock use an extension of PPAs. Another important factor to be considered is the mining of gold, iron, tin, china clay and bauxite that has resulted in deforestation of significant areas. The oil industry does not require large deforested areas. However, all these mining developments must be well planned to avoid increasing the risk of contamination of the river system. The elimination of the original vegetation has resulted in the increase of the erosion rates and the sedimentation of the river system. It can also result in a change in the regional climate, due to its importance in the regional hydrological cycle and its contribution to the atmospheric balance of CO2 and H2O, causing a consequent influence on the global climate. Some research indicates that rainfall in the Amazon Basin will decrease in the coming decades due to changes in global climate, and this may significantly alter the geological and biogeochemical characteristics of river systems.

5. What is being done to mitigate the loss of vegetation cover in the Amazon?

The Ministry of Environment (MMA) concerned with the implementation of Law 12.651, May 25th, 2012, proposed the National Plan for the Recovery of Native Vegetation - PLANAVEG. The elaboration of this plan was a huge challenge for the technicians and its implementation has been discussed among various sectors of society, academic, political and business. It was based on experiences and success actions both in Brazil and abroad. PLANAVEG was designed to meet these demands. It also aimed to expand and strengthen public policies, financial incentives, private markets, agricultural practices, and other measures. This will allow the recovery of native vegetation to a minimum of 12.5 million hectares over the next 20 years. The measures foreseen in the Plan will determine the basis for achieving recovery on a larger scale, with the possibility of adding additional areas to those required by Law 12,651 / 2012. PLANAVEG is based on eight strategic initiatives designed to motivate, facilitate and implement the recovery of native vegetation (MMA) with national, every state and municipalities coverage:

Awareness: to launch a communication movement focused on farmers, agribusiness, urban citizens, opinion leaders and decision makers. This is to promote awareness of what is the recovery of native vegetation, what benefits it brings, and how to get involved and support this process.

Seeds & seedlings: promote the productive chain of native vegetation recovery by increasing the capacity of nurseries and other structures to produce native species, and rationalize policies to improve the quantity, quality, and accessibility of seed and seedlings of native species.

Markets: to foster markets from which landowners can generate revenues through the sale of timber, non-timber products, protection of watersheds, among other services and products generated by the recovery of native vegetation.

Institutions: to define roles and responsibilities among government bodies, companies, and civil society, and align and integrate existing and new public policies for the recovery of native vegetation.

Financial mechanisms: to develop innovative financial mechanisms to encourage the recovery of native vegetation, including preferential bank loans, grants, environmental compensation, specific tax exemptions and forest titles.

Rural extension: to expand the rural extension service (public and private) to contribute to the training of landowners, with emphasis on low-cost recovery methods.

Spatial planning & monitoring: to implement a national spatial planning and monitoring system to support the decision-making process for the recovery of native vegetation.
Research & Development: to increase the scale and focus of research and development and innovation investment to reduce cost, improve quality and increase the efficiency of native vegetation recovery, taking into account environmental, social and economic factors (Miriam & Radoslav, 2017).

The ecological restoration science is still relatively recent; there is a huge challenge to find new knowledge and techniques of species suitable for restoration. Simple phenological information of the species is often scarce. Forestry science has focused on the knowledge of species of economic interest, but with species of ecological interest are few examples that we have with Amazonian species. The CT-PETRO-Amazonia network over 10 years of research on ecological restoration in the state of Amazonas has accumulated reasonable information about the important species in projects for the recovery of degraded areas or ecological restoration (Melo et al, 2014; Amaral et al. al. 2014). There have also been advances in bioengineering, forestry, and ecological studies, as well as comparative monitoring of restored areas compared to the matrix ecosystem.

6. Conclusions

The new forest code presented advances in the Brazilian environmental legislation but has some constraint in humid areas in the Amazon region. This can be explained by the huge forested areas that annually have been flooded. The current legislation still is focused on river channel width. This type of vegetation is still vulnerable to illegal logging or subsistence agriculture. The Rural Environmental Registry (CAR) is an excellent tool to monitor rural properties in terms of good environmental practices and deforestation control. However, the implementation and control are still to be boosted in some northern States. Local politicians have pressed the government to postpone the effective application of this important environmental law. The National Plan for the Recovery of Native Vegetation (PLANAVEG) is promising policy to restore deforested area in the Amazon region. Despite the huge involvement of researchers, NGOs, environment ministry officials, as well as state secretariats, the start of efforts to restore the vegetation has been hampered by the country’s severe political and economic crisis (Iorio et al, 2018).

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TOWARDS SUSTAINABILITY: BUSINESS TO BUSINESS SEGMENTATION IN CARDBOARD MARKET

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Abstract. Sustainable development is affected by packaging. This article deals with the market segmentation and its implementation in the specific market for secondary cardboard packaging. The research was carried out in order to determine segments based on business customers’ needs, demands and characteristics. Customer needs and requirements on corrugated cardboard were formulated by personal questioning of key account managers of cardboard producing companies and marketing, purchasing and logistic department employees from companies. Ten requirements on product attributes and ten requirements on supplier services was identified. The importance of attributes was determined on the 100 points constant sum scale for both groups of requirements. Data were gathered by an on-line questioning, mail was sent to 73 228 respondents, who were acquired from database Albertina database according to economic activities classification (CZ-NACE). Companies, who have at least one listed economic activity corresponding to any of FEFCO sectors were chosen. Total of 848 completed questionnaires were collected. IBM SPSS Statistics 19, principal component analysis and cluster analyses was used in the identification and description of segments and their profiles. Based on results of segmentation process, proposed strategies were identified. This is a follow-up study of the research carried out in 2010. Aside from the significant broadening the respondent base by including small and medium-sized companies, results of this research can be easily implemented in targeting new customers and in determining value proposition in segments.

Keywords: sustainability of performance; business to business market segmentation; secondary packaging; buying behavior; marketing, purchasing


JEL Classifications: M29, L19

1. Introduction

Packaging has become an importact factor affecting sustainable development processes and is widely discussed (Oganisjana et al., 2017; Fabuš, 2017; Ślusarczyk, Kot, 2018). The cardboard industry is one of the important packaging segments. In Europe the volume of produced cardboard sustainably grew until 2015 and reached 43,238 millions m². The decline of industrial production during economical crisis in 2008-2010 meant almost 5% shrinking especially as a result of lowered amount of transported goods. The decisive share, over 40% of corrugated cardboard are processed at the transport and handling package.

There is a long lasting trend of package tailoring and individual customer servicing in the corrugated cardboard package branch. The corrugated cardboard market research was carried out in 2010 (Grosová, Gros, Cisafová,
In order to verify the possibility of business to business (B2B) market segmentation. The aim was to find the typical segments of this industrial packaging market as the basis for the implementation of differentiated strategies. The research focused mainly on existing, partly on the potential customers.

The 2010 research was carried out by personal and electronic questioning. From the total of 554 companies asked, 226 replied, out of which 126 companies did not use corrugated cardboard and 100 filled in complete questionnaire. Most of them, 91 were existing customers. Most important findings were:

1. The requirements for corrugated cardboard. Respondents evaluated the significance of packaging attributes with constant –sum scale 100 points allocation (Aaker, 2003). As the most important was evaluated price with 45.2 points, then quality with 27.3 points, convenience of handling with 14.1 points, environmental impact with 8.2 points, surfacing with 2.7 points, originality with 2.1 points, and the remaining 0.7 points were attributed to other factors.

2. The required level of service. Those, who answered rated the frequency of deliveries required. In 27% of respondents orders are preferred weekly, in 21% monthly, in 16% four times in one year, but 7% prefers daily delivery. There is also an apparent reluctance to make orders for a longer period. Nearly 70% of respondents required delivery date 5 days or less, 28% of respondents expected deliveries within 48 hours. Answers to the question concerning the optimal size of orders is difficult to assess because it depends on many factors, e.g. on delivery frequency. Yet 30% of respondents considered the optimum size of the order of 35% up to 1,000 units, 30% 1000 to 5000 units and 35% of respondents requires from 5000 to 30 000 units.

3. The issue of selecting and collaboration with packaging suppliers. The most important selection criteria include reliability (25.4), delivery time (20.8), flexibility in the delivery time (16.2) and payment of invoices (10.1).

4. In the supplementary questions respondents reported some characteristics of their buying decision centers. In the issue of centralization degree of the buying process 38% respondents reported buying center centralization on domestic or international level, 38% consists from one organisation unit with buying center and the rest 24% respondents has autonomous buying center in every organisation unit. 55% of respondents do not close long term contracts with suppliers, only 7% of respondents makes the contracts on more than one year and only 38% close contracts with suppliers for the period up to one year. Most of the respondents, almost 50%, does not require consultation service on packaging design and has no interest in cooperation in this area. 36% of them consult only their own required changes in design. With regards to who makes decisions, in majority of companies it is one person; this person in 50% of cases comes from the purchasing or logistics department and in 13% of cases it is somebody from the production personnel.

In the 2010 research answers from companies with over than 3 billion CZK turnover were excluded from Principal Component Analysis and cluster analyses due to their unique needs and characteristics. These were the three companies which were classified as extra large companies in the general characteristic. After excluding the three companies, four segments were identified:

Segment 1 - “Followers of world trends”

The name comes from the fact that the described behavior corresponds to the world trends. Respondents in this segment tend to the position of “ecology first” and “user-friendly packaging”. They are therefore willing to pay more for environmentally friendly packaging which allows easy manipulation. The factor “Anytime at a reasonable price” reaches strong negative values, which can be explained as the willingness to accept less flexibility in delivery times. Variations of all these factors is huge, probably the segment also includes companies that do not always decide in the same way.

Segment 2 - “Unassuming consumers”

This group is defined primarily by negative values in the tendency to “user-friendly packaging”, “big and independent” and “ecology first”. Thus, it is rather a medium-sized business, according to classification (European Commission, SME classification), that requires standard packages without much added value. This is supported by a positive factor score “normal requirements”.
Segment 3 – “Planning customers”
In this case, decisive factors are “Ordering” and “Anytime at a reasonable price”. Enterprises in this segment seek long-term reliability of linked contracts and fast delivery in the case of an unexpected situation. Through long term contracts with supplier they seek to secure a good price.

Segment 4 - “The occasional buyers”
The fourth segment was the smallest (12.7% of respondents) and was composed almost from SME with yearly turnover below 10 mil. Eu. In comparison with other segments is the price the most important buying decision factor. That businesses are light users of corrugated cardboard packaging, they are reluctant to attach a long-term contract and prefer the contract with long payment time.

Extra large companies
This group is not a segment in its true meaning. Since these companies were excluded, they did not appear in the results of the cluster analysis. Only three companies belong to this group, it is complicated to determine the group characteristics. But there are some attributes that these companies have in common, they are connected by the type of products packaged. All three companies use corrugated cardboard packaging for machinery or electrical equipment and appliances. As with the others, the price is the very important factor in packaging choice. They make long term contracts with their suppliers. They buy over 20 types of packaging and demand them to be delivered daily with lead time of 48 hours. They use corrugated packaging mostly as transport packaging, with the corrugated cardboard share of 26-50% on total packaging amount.

Due to the limited respondent and company portfolio, whose answers were included in the PCA and following cluster analysis, we considered the results only as a pilot study for a larger scale research. The larger scale research was carried out in 2015. While it is possible to observe increased usage of market segmentation in the Czech B2B market, it still does not match the level in the consumer market. There is little written about the Czech B2B market segmentation, the few authors who wrote about it are only Koudelka (1997), Lošťáková (2005) and Žáček (2010).

The aims of this paper are threefold:
1. to review the conceptual issues concerning segmentation process of industrial markets
2. to develop a base of segmentation variables based on product attributes and on supplier needs
3. to report the findings of empirical research which was carried out to uncover the segments on bussines to bussines cardboard market and to compare it with previous research.

2. Theory of market segmentation
Market segmentation is considered as one of the crucial activities of contemporary marketing (Chernova et al. 2017). Some authors perceive it as important source of information for strategic decision making in the business and company resource allocation (Jain, 1997; Lošťáková, 2005; Filip, Šimák, Kováč, 2011). Segmentation enables a business firm to define its marketing strategy and to allocate its resources across markets and product lines (Choffray, Lilien, 1980). Others (Kotler, Keller, 2008) connect it with the adoption of marketing conception oriented to identification and satisfaction of consumer needs, demands and desires through specification, creation, delivering and communication of specific value. Wind and Cardozo (1974) defined a market segment as a group of present or potential customers with some common characteristic that is relevant in explaining and predicting their response to a supplier’s marketing stimuli. Segmentation reflects the reality regarding consumer needs, demands and behavior; it is rare to find only one type of customer, whose needs can be met by just one unified offer. On some markets, we are often confronted with the fact that every customer might be unique. In that case, it is financially and time-wise inefficient to develop specially tailored offers for every single customer. By appropriate categorization of customers into groups with similar needs, behavior and attributes, it is possible to significantly improve the efficiency of offers while maintaining bearable costs level. The segmentation is also an important tool for uncovering hidden possibilities and potentials for future development. Accord-
ing to (Harrison et al., 2010), this approach is important in commodities, where only insignificant differences between producers exist. Market segmentation is frequently appraised as an effective strategic marketing tool (Weinstein, 2006; Wind, 1978) and reflected in the well-known S–T–P conceptualization of the market segmentation process (Kotler, 2001). During the first stage (segmenting), customers are grouped by applying one or more base variables. This stage aims to group customers into segments with similar needs and buying behavior. In the second stage (targeting), decisions are made about where resources should be prioritized, whereas the final stage (positioning) focuses on the design of marketing mix programmes, that will match the requirements of customers in the targeted segments (Dibb, Simkin, 2001).

The desired outcome to reap the benefits of competitive advantage (Goller, Hogg, & Kalafatis, 2002) i.e. gain market share and/or sell more. The outcome of market segmentation is finding groups with similar demands, but its goal is to gain competition advantage. Bonoma and Shapiro (1984) contended, that one of the major reasons for segmentation is “to provide the company with distinctive competitive advantage. “Segmentation is appropriate for those markets, where it is essential to combine individual customers or consumers into larger buying “units” to ensure marketing activity to be both cost-effective and manageable” (McDonald, Dunbar 2004). The level of standardization or individuality of customer approach is chosen by the companies individually. Up to date there is no clear instruction for the segmentation process. According to (McDonald and Dunbar, 2004) the segmentation process usually means following steps: market definition, identification of segmentation base appropriate for the given market, uncovering the segments and assembly of segments profile. Harris et. al (2010) recommends to realize the B2B market segmentation in following steps:

- Create individual segments for key customers
- Segment other customers traditionally
- Consider utilizing segmentation based on company firmographic data
- Apply segmentation based on needs where possible
- Use the methods of marketing research to identify customer needs
- If it is impossible to accurately determine customers’ needs, consider the possibility of segmentation based on buying behavior
- Use cluster analysis in finding groups with similar needs or behavior
- Assign all existing or potential customers in to segments
- Implement proposed segmentation.

In the identification of segmentation variables company’s (firmographic) data, which are readily and easily accessible, can be used. Abratt (1993) found that the three most common variables used to segment industrial markets are: geographic (87.5% of the companies), demographic (62.5%) and how often the product is used (62%). The segments identified on firmographic data are the same for all, is argued (McDonald and Dunbar, 2004), so this approach does not offer competition advantage and does not lead to sufficiently homogenous company groups. Organizational and buyer characteristics do not provide the idea of these companies’ expectations regarding product and expected services. Company data help to create the image of given market, but not idea about competitive offers.

The solution is the segmentation according to needs and demands. An examination of the traditional business-to-business segmentation variables used in the marketing literature highlights the lack of emphasis placed on customer as the prime segmentation variable (Mitchell, Wilson, 1998), (Filipova, 2016). According to findings Terho et al.(2015) there is the call for action concerning the development of effective segmentation schemes in business markets. They examined sales strategy dimensions and the segmentation was the only one with a direct impact on both market performance and salesperson performance. Paesbrugghe et al. (2017) emphasizes in their study that selling firms should approach their customers based on customers’ buying styles and requirements.

The result of customer needs identification is the possibility to create targeted offers and not squander resources where it is not needed. To the customer group, who seek always the lowest price, standard offer can be given,
sophisticated consulting services should be offered only to those customers who are interested in close cooperation and long term relationship. While the benefits of that approach are obvious, implementation of that approach is problematic at best in the real world. The problems can be identified in information acquisition (who will provide the information regarding needs), instability of needs (for example in the connection with company strategy change and buyer preferences or in the connection to macroenvironment for example the change of demands during crisis). Segmentation by needs is perceived as ideal, because it fulfills the basic task of marketing, which is identification and satisfaction of customer needs, but it is also by far the most difficult considering realization and implementation.

Segmentation by buying behavior (Sharma and Lambert, 1994) is roughly in the middle between aforementioned processes and it is based on the uncovering of the company behavior patterns, from which purchasing motives can be deducted. It can be used when the company keeps customers records which enable to identify whether it is a regular customer consulting the purchase of new product variants in advance or one time customer taking advantage of momentarily favorable offer or using the suppliers’ ability to quickly fulfill unexpected demand. Sharma and Lambert (1994) point out the importance of customer service requirements in segmentation due to possibility to create competitive advantage.

Wind and Cardozzo (1974) proposed the formation of macro segments in the first segmentation stage and after the selection of acceptable segments to continue in the second stage with microsegmentation. The output of from segmentation should include “key dependent variables on which firm can be assigned to segments (bases of segmentation) and set of independent variables which can provide better insight into the key characteristics of segment, i.e. descriptors of segment. Nested, multistep hierarchy model suggested by Shapiro and Bonoma (1984) identifies five general segmentation criteria groups, and recommend moving systematically from outer to inner nests, from firmographic through operating, purchasing approaches and situational criteria to personal characteristics of decisionmakers. According to the Shapiro and Bonoma (1984) it is up to the company and the given market whether in this “break-down” method all variables will be used on each level, which can be omitted and which added. Building-up approach, from Kotler (2001), sees the customers as individuals with different characteristics and recommends seeking similarities between them.

Freytag a Clarke (2001) and Lošťáková (2011) emphasize the idea of segmentation by “kind of relationship, requested by customer”, which is useful for the B2B market conditions. They basically differentiate transaction customers with the need of one time purchase and relationship customers who prefer long time cooperation.

3. Data and methodology

The methodology of this paper consists of following steps: 1. identification of product attributes and supplier demands, 2. surveying customers and data gathering, 3. data analysis and identification of customer clusters, 4. description of segments. Questionnaire was designed after consulting literature (Sharma and Lambert, 1994) and Gros et. al (2016). Customer needs and requirements were formulated by personal questioning of key account managers of cardboard producing companies and marketing, purchasing and logistic department employees from companies. Attributes were divided to the area of requirements in product attributes on corrugated cardboard and in requirements on suppliers’ services attributed as follows:

Product attributes
1. Packaging quality (low scrap count, contracted attributes fulfillment)
2. Packaging cost (low price per piece)
3. Packaging material toughness (solidity, protective function)
4. Easy packaging manipulation (filling, transport, opening)
5. Marketing function for end customer (packaging design)
6. Low transportation costs (more products per pallet, light packaging)
7. Environmentally friendly packaging (recyclable, ecology footprint)
8. Information function (easy identification, traceability)
9. Special packaging construction (packaging is tailored to specific product needs)
10. Special packaging or surface modification (hygienic, waterproof, rust protection)

Supplier services attributes
1. Lead time
2. Supply frequency
3. Invoice maturity time
4. Order fulfillment reliability
5. Consulting services (tailored packaging, packaging optimization)
6. Supplier flexibility (in order volume change or lead time changes)
7. Brand or image of supplier
8. Low cost level
9. Broad assortment of standard packaging
10. Supplier references

To determine the importance of given attributes the respondents distributed 100 points between ten packaging attributes or ten supplier attributes according to their importance to the customers. The choice of constant-summ scale 100 points allocation (Aaker, 2004) secured the comparability of evaluators and lead to determination of mutual importance of criteria. These variables were measured on 0-100 scale. The electronic questionnaire was programmed in a way to facilitate the process of filling in by running count of point left to allocate and also this process secured that 100 point were always allocated. For the identification and addressing existing and most importantly potential customer’s web based mail survey was used. The questionnaire was sent via mail to 73 228 respondents, from which 215 were current customers of company (0.3% of respondents) and 73 013 potential customers. Potential customers were acquired from database Albertina (B2B company database) using export of chosen subjects according to economic activities classification (CZ-NACE). From the total number of economic subject in Czech Republic were chosen those having at least one listed economic activity corresponding to any of FEFCO sectors. This selection provided the list of 178 099 subjects. From this list those who had listed at least one email address in the Albertina database, which was valid for 73 013 subjects (41% from total chosen). Respondents acquired from company (current customers) had always email address of person competent for packaging purchase. Respondents from general Albertina database had usually generic contact (info@example.tld) or HR department in the case of larger companies. In the case of smaller companies or tradesmen direct contact was given. Completed questionnaires were returned in three weeks. The questionnaire itself was tailored as web application, using general HTML (HyperText Markup Language) language in combination with CSS (Cascading Style Sheets) on standard web platform LAMP (operating system Linux, web server Apache, MySQL database and script PHP). A total of 848 filled in questionnaires were collected. The reason for not filling in the questionnaire was with great probability the fact that many respondents do not use cardboard packaging and deleted the questionnaires from mail without providing the answer for first question which identified whether the respondent is able to give relevant data for the research.

IBM SPSS Statistics 19 (SPSS Inc., 2010) was used to evaluate the data acquired from the questionnaires. First, a general characteristic of whole respondent portfolio was performed. Principal components analysis on the basis of 20 input variables - customer needs in relation to packaging and to suppliers demands led to reduction to 7 factors, which were evaluated and interpreted by means of factor loadings. Only factors with eigenvalues greater than 1.0 were retained in the model. Then the orthogonal Varimax rotation was used to facilitate interpretation of the factors, Table 1. Identified seven factors explain 57.3% of total variance of 20 variables.
Table 1. Rotated Component Matrix

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification of goods in supply chain</td>
<td>0,693</td>
</tr>
<tr>
<td>Supplier affirmative references</td>
<td>0,665</td>
</tr>
<tr>
<td>Special material or surface adjustment</td>
<td>0,612</td>
</tr>
<tr>
<td>Delivery frequency</td>
<td>0,409</td>
</tr>
<tr>
<td>Marketing function for end customer</td>
<td>0,390</td>
</tr>
<tr>
<td>Packaging ecology</td>
<td>0,340</td>
</tr>
<tr>
<td>Special packaging construction</td>
<td>0,824</td>
</tr>
<tr>
<td>Consultancy service</td>
<td>0,553</td>
</tr>
<tr>
<td>Supplier image</td>
<td>0,332</td>
</tr>
<tr>
<td>Easy to manipulate</td>
<td>0,710</td>
</tr>
<tr>
<td>Low transport cost</td>
<td>0,579</td>
</tr>
<tr>
<td>Supplier flexibility</td>
<td>0,359</td>
</tr>
<tr>
<td>Delivery reliability</td>
<td>0,532</td>
</tr>
<tr>
<td>Packaging price</td>
<td>-0,373</td>
</tr>
<tr>
<td>Delivery date</td>
<td>0,767</td>
</tr>
<tr>
<td>Low price level supplier</td>
<td>-0,498</td>
</tr>
<tr>
<td>Payback time</td>
<td>0,439</td>
</tr>
<tr>
<td>Packaging material durability</td>
<td>-0,884</td>
</tr>
<tr>
<td>Quality of packaging</td>
<td>0,384</td>
</tr>
<tr>
<td>Standard packaging big assortment</td>
<td>0,658</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Factor components of F1 „Total packaging“ describes complex demands of customer on the packaging function. The customer does not use the package only as protection, but examples for its other functions. Customers with high value of this factor demand identification of the package in supply chain, special surface treatment, appreciate its marketing function for final customers and its environmental friendliness. On the other hand price is not important. They demand supplier with positive references, high frequency of supplies and longer invoices payback time.

Factor components of F2 „Fitted packaging“ describes the companies’ trend to emphasize the importance of special packaging construction (mainly tailoring to the product) or special material, surface treatment, consulting services needed to fulfill the customer’s individual needs, brand and image of supplier and his flexibility. The customers with high value of this factors count among the most lucrative ones, they demand individual approach in their needs fulfillment.

Factor components of F3 „Transportation packaging“ describes the companies’ trend to accent logistical function of corrugate cardboard packaging: easy manipulation, low transportation costs and also supplier flexibility. For this the companies are willing to pay price premium.

Factor components of F4 “Reliability a quality regardless price” in the positive sense this factor describes the respondents’ trend to accent high supplier reliability and packaging quality without regards to packaging unit price or low price level of supplier. In the negative sense it describes companies preferring price at the expense of packaging quality and supplier reliability.

Factor components of F5 „Immediately supply, delayed payment” describes the trend of short lead times with prolonged maturity of invoices and low sensitivity to low price level of supplier. The interpretation for this factor can lead to companies with high negative value of this factor, which are small, undemanding and saving companies seeking supplier with low price level, short lead time or long maturity of invoices). On the other hand, can the positive value of this factor be interpreted as the effort to acquire needed packaging in as little time as possible and then delay the payments?
Factor components of F6 “Quality packaging without protective function” represents the trend, when respondents either prefer high quality packaging without protective function or durable packaging to protect the products without the accent to quality. On one side there are customers utilizing the corrugated cardboard packaging’s other attributes and these accent quality, on the other side are customers using its protective qualities without regard to quality.

Factor components of F7 “Standard packaging” describes the customers preferring mainly broad standardized offer, partly of brand supplier and environmental friendliness of the packaging. On the other hand the maturity of invoices is not and issue for them, so is supplier flexibility. The company with high value of this factor is obviously one time purchaser of standard packaging, who also chooses brand or image and values the environmental friendly packaging.

The next step of the analysis was the clustering of customers into groups according to the factors. The analysis was carried out in IBM SPSS Statistics 19 (SPSS Inc., 2010) by Hierarchical Cluster Analysis with Ward Cluster Method, where Euclid distance squared was used to express the distance. The optimal number of segments was five, so as to get appropriate number of adequately sized segments, where the respondents will be similar to each other. If using four segments, one segment was too large (39%), while when using six segments, two were unnecessarily small (9%). The five derived segments were of similar size, only segment 3 has nearly 10% of respondents, segment 4 on the other hand nearly 30%.

To describe these segments their profiling was carried out. In the first step according to seven factors on which basis were the segments created. In the next step the segments were profiled according to the original twenty variables. The Figure 1a describes the average count allocated to variables related to packaging attributes, on the Figure 1b the average count related to demands on supplier.

![Fig. 1a. Average point count allocated to product attributes by respondents through five segments](image-url)
The profiles of acquired segments were then completed with the help of other questions which were to identify the respondent and facilitate the usability of segmentation in marketing strategy implementation. These were mainly the characteristics related to segment attractiveness such as consumption volume, company size, turnover, branch according to FEFCO. The segments and their profiles are subject to further description.

**Segment 1 – “Traditional, hard bargaining buyer”**

First segment represents roughly 20% of respondents, with above average emphasis on price and packaging quality, below average emphasis on environmental friendliness of packaging (Table 2). The most important the supplier attributes there are lead times and playback time are, on the other hand low total price is not a priority. Above average representation was in FEFCO sector “Beverages”, in other segments the representation was average. From other characteristics the cooperation with multiple suppliers, central, nation-level supplier choice are typical. Also the long term contract (most frequently for 6 months up to one year) and higher frequency of supplies are typical. The demanded lead time importance is above average (2-3 days are most frequent) and longer invoice maturity. They also demand above average contact with supplier.

**Table 2. Segment 1 profile**

<table>
<thead>
<tr>
<th>Variables packaging</th>
<th>Significantly above average emphasis</th>
<th>Significantly below average emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packaging price</td>
<td></td>
<td>Environmental friendliness</td>
</tr>
<tr>
<td>Packaging quality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variables supplier</td>
<td>Supplier lead time</td>
<td>Supplier low price level</td>
</tr>
<tr>
<td></td>
<td>Invoice payback</td>
<td></td>
</tr>
<tr>
<td>Factors</td>
<td>Supply now, pay later</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quality packaging without protective function</td>
<td></td>
</tr>
</tbody>
</table>

Segment 2 – „Undemanding buyers of standard packaging“
The second segment (Table 3) represents roughly 10% respondents, being the least numerous segment, purchasing significantly below average packaging volumes, with its respondents having significantly below average turnovers and basic capital. The respondents emphasize broad offer of standard packaging, on the other they give low emphasis on supply frequency or invoice maturity.

Above average emphasis is on the easy manipulation with the packaging, environmental friendliness and low transportation costs of packaging – so they demand mainly the function side of packaging. Considering the FEFCO sectors the members of this segment are above averagely represented in sector “Electrical machinery, apparatus, equipment and accessories”, on the other had below average represented in “Foodstuffs”, "Fresh foods stuffs, agricultural products”, "Beverages”, “Furniture, wooden and similar products”, “Pottery, glassware and other non-metallic products” and “Metal and similar products”. The members of this segment purchase low variety of packaging (most often 1-5 types) in small batches (either 0-100 or 100-1000 units). They change the packaging (and obviously its supplier) above averagely often, do not need consulting or packaging service. Most often these are companies of 1-5 employees.

### Table 3. Segment 2 profile

<table>
<thead>
<tr>
<th>Variables packaging</th>
<th>Significantly above average emphasis</th>
<th>Significantly below average emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy packaging manipulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental friendliness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low transportation costs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Variables supplier                   |                                      |                                     |
| Broad offer of standard packaging    |                                      |                                     |
| Supply frequency                     |                                      |                                     |
| Invoice maturity                      |                                      |                                     |

| Factors                              |                                      |                                     |
| Standard packaging                   |                                      |                                     |
| Packaging for transport              |                                      |                                     |
| Complex packaging                    |                                      |                                     |

Segment 3 – „Demanding buyers of tailored packaging“

The third segment represents roughly 20% of respondents. It is the most demanding segment with low pressure to price but high demands to individual approach and services (Table 4). Companies in this segment have significantly above average turnovers and basic capitals. The respondents emphasize special packaging construction, special material or surface treatment, they accent environmental friendliness and marketing function of the packaging for final customer and last but not least traceability of the package in the supply chain. On the other hand they accent below average emphasis on unit price. They demand flexibility, supply frequency, reference and consulting services. Below average importance is given to low price level of supplier. In the FEFCO sectors we will find their above average representation in sector ““Fresh foods stuffs, agricultural products” but also in “Soap, perfume, cosmetics, cleaning and cosmetic products”, „Ceramics, glassware and other non-metallic products“ and „Radio, TV, communications“. Companies in this sector purchase multiple types of packaging, are generally most optimistic regarding further purchasing volumes in next 3 years. They cooperate with more suppliers, the choice of supplier is above averagely frequent and centrally on international level.

They purchase packaging on auctions and contract frequently on long time basis. They prefer to order by email, demand high frequency of supplies, on the other hand the pressure on lead time is below average, 6-10 days is sufficient. They are distinguished by moderately below average demands on invoice maturity and significantly above average demands on consulting services before and during contracted period. Regarding packaging audit, they exhibit the highest interest. From all the segments environmental friendliness is the most important. They are above averagely represented by stock companies with high employee number.
Table 4. Segment 3 profile

<table>
<thead>
<tr>
<th>Variables packaging</th>
<th>Significantly above average emphasis</th>
<th>Significantly below average emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special packaging construction</td>
<td></td>
<td>Packaging unit price</td>
</tr>
<tr>
<td>Environmental friendliness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marketing function</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special packaging material or special surface treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply chain traceability</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Variables supplier           |                                                                          |                                                            |
| Supplier flexibility         |                                                                          | Supplier low price level                                   |
| Supplier consulting services |                                                                          |                                                            |
| Supply frequency             |                                                                          |                                                            |
| Supplier references          |                                                                          |                                                            |
| Supplier brand or image      |                                                                          |                                                            |

Factors

- Complex packaging
- Tailored packaging

Segment 4 — „Saving buyer“

Fourth segment represents roughly 30% of respondents, being the largest. The respondents are distinguished by highest pressure on unit price and generally low price level of the supplier. As it is common in these saving segments, not only the segment is the largest regarding the customer count, but its customers have highest average packaging consumption, twice the number compared to the total average. Aside from the high pressure on price, they demand easy manipulation with the package and low transportation costs, on the supplier side they demand flexibility (Table 5). In FEFCO sectors, the above average count of the respondents if sound in sectors “Foodstuffs”, “Textile, clothing, leather goods” and “Metal, metal processing”.

Customers use above average number of packaging types, internet is the main tool of new supplier finding. They are content with longer lead times but pay mature invoices less frequently.

Table 5. Segment 4 profile

<table>
<thead>
<tr>
<th>Variables packaging</th>
<th>Significantly above average emphasis</th>
<th>Significantly below average emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packaging unit price</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easy packaging manipulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low transportation costs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Variables supplier           |                                                                          |                                                            |
| Supplier low price level     |                                                                          |                                                            |
| Supplier flexibility         |                                                                          |                                                            |

Factors

- Packaging for transport
- Quality package without protective function

Segment 5 — „Conservative buyer of traditional packaging“

Fifth segment (Table 6) represents roughly 20% of respondents. Its members value the traditional protective function of packaging from corrugated cardboard and emphasize the toughness of the packaging. On the other hand they emphasize less than average the easy manipulation and low transportation costs.

From the supplier they demand reliability. Because of their average yearly unit consumption being below average they hold the same position regarding turnover and basic capital.

Their representation in FEFCO sectors was found in “Furniture, wooden and similar products”, “Paper, printing material”, “Chemicals and similar products” and “Sport goods, toys”. The customers buy lower number of packaging types (max. 20), order also smaller batches than average (regarding units) and most often cooperate with one or two suppliers with whom are above averagely satisfied. They also value references and recommendations in new supplier choice. They prefer ordering by phone or in person. They are also undemanding in regarding frequency of supply (few times a year) and their lead time most often over 11 days. They pay their invoices due time, contact with supplier is demanded once a year or they contact the supplier when they need. Packaging change takes place only after a long time, most often after over 3 years, have accurate packaging specifications and do not demand consulting or packaging audit (Table 6). Most often these are companies of 1-5 employees or tradesmen.
Table 6. Segment 5 profile

<table>
<thead>
<tr>
<th>Variables packaging</th>
<th>Significantly above average emphasis</th>
<th>Significantly below average emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packaging</td>
<td>Packaging toughness</td>
<td>Easy packaging manipulation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low transportation costs</td>
</tr>
<tr>
<td>Variables supplier</td>
<td>Supplier reliability</td>
<td></td>
</tr>
<tr>
<td>Factors</td>
<td>Reliability and quality without regards to price</td>
<td></td>
</tr>
</tbody>
</table>

4. Comparison of results

The results of two researches of B2B corrugated cardboard market segmentation, carried out in 2010 and 2015 lead to following conclusions:

The form of electronic questioning focused primarily on potential customers using commonly accessible addresses of companies has significantly broadened the portfolio of respondents whose results entered the segmentation process (840 in comparison with 100 respondents). The average count of respondents whose answers were used in segment profile compilation is 170 compared to 25. The acquisition of sufficient number of answers on B2B markets is a challenge according to Fill and McKee (2011).

The data acquired in both phases of research were processed using the same method, however different the method of segmentation basis compilation, i.e. data used in factor and cluster analysis and following segment profile creation. In the second phase of the project the segmentation base was consisted of both the customers’ package attribute demands and demands on the supplier, which are fundamental on the B2B market. Other characteristics were used in segment profile compilation. Firmographic data such as branch of industry, turnover, packaging expenses etc. were used so as to ease the phase of segment evaluation and choice.

In spite of differently named factors and segments, there has been found a match in three segments: “Planning customers” from the first study and “Demanding buyers of tailored packaging”, “Unassuming consumers” and “Undemanding buyers of standard packaging” and “The occasional buyers and “Saving buyer”. As an example of specific strategy, the use of internet market where customers from segment “Undemanding buyers of standard packaging” and “Saving buyer” choose products from broad range of standard packaging, which enables lowering the service costs of this not very attractive segment, can be given. “Demanding buyers of tailored packaging” will continue to demand individual approach and tailored solution based not only on their knowledge of package demands but also based on the demands of other participants in their supply chain.

The interpretation of acquired factors and segments is subjective to some extent. As stated by McDonald and Dunbar (2004), the choice of segmentation base and segment profile compilation is an iterative approach and is connected with the purpose which was the segmentation carried out for.

In present Czech economy undergoes turbulent period of regrowth after the recession and this fact makes all the statements regarding groups of companies more questionable than usual. Described segments are a good basis for further market development survey, which will inevitably lead to its update. Recently, Thomas (2016) propose to include into segmentation process also the customer’s customer and so on, in a multistage market segmentation structure. This approach can be useful in the corrugated cardboard industry, where the packaging is manipulated in retail sector or can produce value to end customer.

Conclusions

Nearly 30 years ago, Shapiro and Bonoma (1984) noted that segmentation was used, more as a way of explaining and understanding marketing outcomes rather than as an important component of planning for the future. This article described the process of two researches conducted in order to identify and compile profiles of found segments so as to enable the design of targeted marketing based on customer needs on product and on supplier.
Applicability of results is limited to specific corrugated cardboard users market. From the view of corrugated cardboard packaging producers the proposed model has its use as helpful tool in service provision development and new customers’ acquisition.

Today’s relevant segments are not only industry-specific; they are probably company-specific as well. And those segments will change constantly so requiring revision and correction with new data on real behaviors.

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The title of the article should be printed in 11 pt bold type and should be centered. There should be a single line space between the title and the author’s name.

The name and surname of the authors should be printed in small letters of 11 pt bold type and should be centred. Below the author’s surname, the name of the institution (represented by the author or co-authors) must be printed in 10 pt italic; its address and the author’s e-mail written and centred.

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Introduction, main text and conclusions should be printed in 11 pt type single interval in one column at the distance of 1 line from keywords.

Figures or tables should be mentioned in the text and the place should be indicated in the separate line. The numbers of figures and tables and inscriptions below are written in 9 pt regular typeface. Figures and tables are separated from the text by one-line space.

The titles of chapters and sub-chapters are printed in small letters, 11 pt bold-regular type and aligned left. The introduction, titles of chapters and conclusions are numbered. The titles of chapters and sub-chapters should be separated from the text by one-line space.

The name of the author of the source, the year of publication and pages should be presented in the text in brackets. The list of references is given after the conclusions. The word References is spelled in small letters, 11 pt bold-regular type, left ranged and the list of references in 9 pt. The references are to be presented in the alphabetical order, in the original language; translation into English is given in square brackets. References according to the Harvard citation style, e.g. http://libguides.library.uwa.edu.au/harvard.
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