

ТЕМЕ

JOURNAL OF SOCIAL SCIENCES
ЧАСОПИС ЗА ДРУШТВЕНЕ НАУКЕ

UDC 1+3

3
2024

ISSN 0353-7919

ТЕМЕ 3/2024

Published by
UNIVERSITY OF NIŠ

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Publication frequency – four issues per year
Circulation: 75
The journal is available via Index Copernicus,
"Central and Eastern European Online Library"
(CEEOL), EBSCO Information Services and
Serbian Citation Index
Referred to DOAJ, ERIH PLUS
Editorial office address: Univerzitetski trg 2,
18000 Niš, Serbia. Phone (+381 18) 257-095
Printed by ATLANTIS DOO, Niš, Serbia

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Часопис излази тромесечно
Тираж: 75 примерака
Часопис је доступан преко Index Copernicus,
„Онлајн библиотеке централне и источне Европе”
(CEEOL), EBSCO базе
и Српског цитатног индекса
Реферисан у DOAJ, ERIH PLUS
Адреса редакције: Универзитетски трг 2,
18000 Ниш. Тел. (018) 257-095
Штампа ATLANTIS DOO, Ниш



CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

3

ТЕМЕ : часопис за друштвене науке / главни и одговорни
уредник Сузана Ђукић. - Год. 13, бр. 1/2 (1990)- . - Ниш :
Универзитет у Нишу, 1990- (Ниш : Atlantis). - 24 cm

Тромесечно. -

Текст на срп. и енгл. језику. -

Је наставак: Марксистичке теме (Ниш) = ISSN 0351-1685. -

Друго издање на другом медијуму: Теме (Online) = ISSN 1820-7804

ISSN 0353-7919 = Теме (Ниш)

COBISS.SR-ID 559631

**Publication of the Teme journal is co-financed by
the Ministry of Science, Technological Development and Innovation
of the Republic of Serbia.**

ТЕМЕ

JOURNAL OF SOCIAL SCIENCES
ЧАСОПИС ЗА ДРУШТВЕНЕ НАУКЕ

ТЕМЕ, Vol. XLVIII, № 2, July – September 2024, pp. 563–797

ТЕМЕ, г. XLVIII, бр. 2, јул–септембар 2024, стр. 563–797

UDC 1+3

ISSN 0353-7919

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ARTIFICIAL INTELLIGENCE AND SOCIAL WORK: ETHICAL DILEMMAS AND CHALLENGES IN THE PROTECTION OF HUMAN RIGHTS

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Abstract

This paper will look at the potential of artificial intelligence in the field of social work as a helping profession focused on social justice, social development, democracy, equality and the protection of human rights. Artificial intelligence represents a complex area that is still not advanced enough, especially in the field of social work. In this sense, AI is seen as a discipline and science that should make everyday life easier, while on the other hand there are still numerous moral and ethical issues, especially in the field of human rights protection. At first glance, AI and social work may seem like an unlikely combination, or even as conflicting disciplines; however, the paper will show the strengths, and the common tendencies of the aforementioned disciplines. Additionally, the paper will present what the main ethical dilemmas and challenges in the implementation of artificial intelligence in the field of social work are, as well as what various state-of-the-art mechanisms are provided at the moment. Finally, the paper leaves room for discussion about the digitalisation of social work, the practicality of applying AI in social work, as well as the possibilities of more proactive protection of human rights and the establishment of new policies and practices.

Key words: artificial intelligence, social work, social justice, ethical dilemmas, protection of human rights.

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ВЕШТАЧКА ИНТЕЛИГЕНЦИЈА И СОЦИЈАЛНИ РАД: ЕТИЧКЕ ДИЛЕМЕ И ИЗАЗОВИ У ЗАШТИТИ ЉУДСКИХ ПРАВА

Апстракт

У овом раду сагледаће се потенцијали вештачке интелигенције у домену социјалног рада као помоћне професије која је усмерена на социјалну правду, социјални развој, демократију, једнакост и заштиту људских права. Вештачка интелигенција представља једно комплексно подручје које још увек није довољно развијено, посебно у домену социјалног рада. У том смислу, ВИ се посматра као дисциплина и наука која би требало да олакша свакодневни живот, док са друге стране и даље постоје бројна морална и етичка питања, посебно у домену заштите људских права. Наизглед, ВИ и социјални рад могу изгледати као мало вероватна комбинација, или чак као сукобљене дисциплине, међутим у раду ће се приказати снаге, али и заједничке тенденције горепомнутих дисциплина. Са друге стране, приказаће се и које су главне етичке дилеме и изазови при имплементацији вештачке интелигенције у област социјалног рада, као и различити механизми који су тренутно актуелни. На крају рада остављен је простор за дискусију о дигитализацији социјалног рада, о практичности примене ВИ у социјалном раду, као и о могућностима проактивније заштите људских права и успостављању нових политика и пракси.

Кључне речи: вештачка интелигенција, социјални рад, социјална правда, етичке дилеме, заштита људских права.

INTRODUCTORY CONSIDERATIONS: A BRIEF OVERVIEW OF THE IMPORTANCE OF HUMAN RIGHTS IN THE SOCIAL WORK PROFESSION

Social work has a long history of dealing with the protection of human rights. Bearing in mind that social workers deal largely with vulnerable and marginalised populations, as well as those whose *human rights are violated*, social work must be based on human rights.

In this context, social workers should adhere to professional ethical responsibilities, respecting the integrity of each person, while on the other hand, they often encounter various ethical dilemmas because decision-making and designing interventions in social work are almost always complex. Various authors (e.g. Ife, 2008) believe that human rights provide a moral basis for the practice of social work, both at the level of daily work with service users and at the level of community, and various forms of activism. The idea of human rights actually implies the search for universal principles that apply to all people, regardless of their cultural milieu, belief system, sex, gender, race, ability, etc. (The Universal Declaration of Human Rights, 1948).

It should be emphasised that human rights are not static, but differ over time and in relation to different cultures, as well as in relation to the political context, that is, they must be understood in context. *The Univer-*

sal Declaration of Human Rights (1948), although perhaps the most significant work when talking about the achievements of the twentieth century, should not be seen as a definition that will not be subject to change in the future. Therefore, it is necessary to make a sharp distinction between the *universality* of human rights and their *staticness* and/or *immutability*. Human rights should be universal, but this does not mean that they should not change over time and adapt to new trends and practices.

The foundation of the idea of human rights in social work is intrinsically connected with the concept of *justice*. It is important to note here that a distinction is usually made between retributive and restorative approaches to justice (see also Škorić & Galetin, 2022). If we take as an example a user who has committed a criminal act, the retributive approach recognises punishment as a form of sanction, that is, those who have committed a criminal act and thereby violated human rights should be made to ‘pay’ for their (mis)deeds. By contrast, a restorative justice approach seeks reconciliation, as well as the restoration of peace, security, non-violence and respect. It confronts the person who committed the crime with his behaviour and strives for corrective work and treatment, confronting the victim and creating a climate of non-violence. In that respect, social workers play a very important role, that is, this is the area of criminal justice where the profession of social work can make its great contribution to the protection of human rights.

The approach to social work related to the protection of human rights requires that users should have maximum input in making decisions concerning their future. On the other hand, social workers are expected to make a maximum effort to facilitate such contribution and to enable reciprocity in the relationship. Facilitating reciprocity and protection against oppressive practices requires social workers to be informed not only about the case they are dealing with, but also about the broader political and cultural-historical contexts of the beneficiaries (see also Ife, 2008). In this sense, it is necessary to mention human needs. When social work professionals assess needs, the actual desired state can be described as the *fulfilment of a certain right*. When, for example, social work professionals assess that the child needs special educational programs, this is done based on the understanding of the child’s right to an appropriate education and the right to realise the maximum educational potential. If the above is summarised, statements about needs within social work are also statements about (human) rights.

One of the most important characteristics of social work is the code of ethics, which serves as a work framework within which practitioners work. That is, ethics is an irreplaceable part of social work practice. However, the very nature of social work practice is often contradictory, and ethical dilemmas (as we saw earlier) are part of the practice of every social worker (Clark, 2000). In this sense, ethical codes serve to en-

courage the ethical behaviour of social workers, but also as a control function, trying to prevent unethical behaviour, discrimination and the violation of human rights.

Namely, the core of social work is to promote and protect society and defend the rights and interests of vulnerable individuals, groups and/or communities, which is currently confirmed by the international definition of social work, which states that the principles of social justice, human rights, collective responsibility and respect are key to social work. In this regard, the aspiration of modern social work is the incorporation of modern technologies into the profession, which will facilitate the enjoyment of the basic human rights and freedoms of citizens. One of the modern concepts is *artificial intelligence*, whose possibilities in the context of social work and human rights protection will be discussed in the following text.

ARTIFICIAL INTELLIGENCE AND THE CHALLENGES OF ITS IMPLEMENTATION IN THE FIELD OF SOCIAL WORK

The European Commission's Communication on Artificial Intelligence (2018) defines artificial intelligence (hereafter AI) as follows:

Artificial intelligence refers to systems that exhibit intelligent behavior by analyzing their environment and taking actions – with a degree of autonomy to achieve specific goals. AI based systems can be purely software-based, operating in a virtual world (e.g. voice assistants, image analysis software, search engines, speech and face recognition systems) or AI can be embedded in hardware devices (e.g. advanced robots, autonomous cars, drones, etc.).

(The European Commission's Communication on Artificial Intelligence, 2018, p. 3)

Artificial intelligence is not a unique tool, but a set of algorithmic computing capacities that can perform human functions in different environments (e.g. facial recognition, language processing, social intelligence, etc.). The appearance of such highly automated tools also stimulated the issue of *social justice* and *the protection of human rights*, especially in the helping professions where man with his knowledge and skills is the primary 'tool.' As a values-oriented profession with a strong ethical code, social work is in a position to engage across disciplines in order to provide information for improving policy and practice at all levels and protecting human rights. Namely, although it is spreading as an engineering tool, AI often represents a risk for vulnerable and underrepresented individuals (but also groups and communities), and it is necessary to incorporate ethical principles into these tools and products. That is, the core val-

ues of social work, such as social justice, integrity, and relationship-based practice, make it suitable to help empirically test the effectiveness of algorithmic products (Minguijón & Serrano-Martínez, 2022).

AI and social work may seem like an unlikely combination, or even conflicting disciplines. However, it turns out that there are three main intellectual points of convergence between these disciplines: complexity, uncertainty, and the importance of practice (see also Ohlenburg, 2020). The following *Figure 1* presents the activities of the social worker and the attempt to integrate AI in the field of social services. Namely, a few years ago there were tendencies to transform social work in relation to (new) technologies for the sake of improving social services. Special attention was drawn during 2020, during the period of the COVID-19 pandemic, when social services around the world rapidly adopted new technologies due to physical distancing measures.

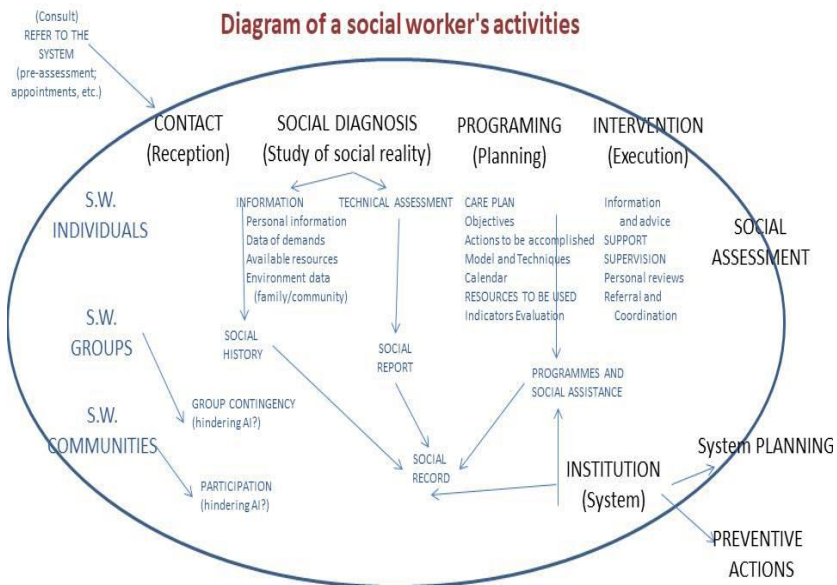


Figure 1. Diagram of a social worker's activities (Minguijón & Serrano-Martínez, 2022, p. 335)

AI, as shown, is certainly one of the mechanisms that facilitate the enjoyment of the basic rights and freedoms of citizens; however, it also represents a *risk* for certain rights and freedom: for example, the right to physical integrity and data integrity, the right to freedom of thought and expression, the right to access information, the right to privacy, and espe-

cially important in this context, the right to equality, non-discrimination and the protection of marginalised and deprived groups.

In other words, artificial intelligence can be a force that helps society overcome the great challenges of our time (e.g. poverty, homelessness, etc.), but it can also have negative effects. Some authors (e.g. Goldkind, 2021) argue that the potential for achieving social justice goals lies at the intersection of social work and artificial intelligence. By integrating AI into new initiatives, social workers can generate data-driven insights and formulate better protocols to promote social justice. A good example in this context is a project that used predictive modelling to create a six-point index that assesses the main predictors of youth homelessness, which could help communities proactively identify and prioritise housing interventions for youth at risk. In short, “AI has the power to promise the promotion of diversity, equality and inclusion. However, limited availability of data, biased nature of available data and lack of resources need to be overcome” (Chauhan & Kshetri, 2022, p.1).

Discrimination and biases are inherent problems in many AI applications (such as in facial recognition systems that fail to recognise dark-skinned women). These outcomes, that is, discrimination and bias can arise from limited data sets that do not fully represent society as a whole, which in the long run reinforces the inequality and injustice already present in certain communities. Some of the topics for further investigation in this domain are as follows.

- What happens when AI and algorithmic decision-making lead to someone being disadvantaged or discriminated against?
- What ethical considerations must be taken into account when developing artificial intelligence in social work and what are the priorities? If ethical parameters are incorporated and programmed into AI, whose ethical and social values are they, bearing in mind that every society, cultural group, system and/or state views ethics through contextual lenses? That is, variations in ethical and social values underlie our global society and are variable over time;
- What qualities must a robot have in order to get along or connect with a human being (which is a very important issue in social work)? It is also questionable whether it is possible to program a robot to conduct basic communication and understand some additional instructions;
- Who is responsible for the actions and abuses of AI? Is it the developer, the manufacturer, the end users, the AI itself, or someone else? (Russell & Norvig, 2010).

The above implies that it is very important to also address ethical issues in the AI domain in order to minimise the ethical harms that may result from poor (or unethical) design, inappropriate application or abuse.

Modern technologies raise issues that go to the core of human rights protection, such as the issues of privacy and free expression. In other words, AI can often have implications for democracy and people's right to private life and dignity. For example, if artificial intelligence can be used to determine people's political beliefs, then individuals could also become susceptible to manipulation. That is, political strategists could use this information to identify voters who, for example, vote for the ruling party, and could increase the voter turnout in elections through various resources.

Previous research (e.g. West, Whittaker & Crawford, 2019) testifies that there are still biases in AI algorithms, primarily due to the prejudices that exist in its creators. In addition, there is a deep concern about the degree to which the AI system can 'decipher' contexts, which is crucial to the interpretation of any action, especially in the area of social work. Due to a lack of understanding of language, cultural nuances and social context, there are numerous impacts when AI technologies misinterpret the environment and lead to human rights violations.

TOWARDS THE DIGITALISATION OF SOCIAL WORK: PERSPECTIVES AND CHALLENGES

In the age of digitalisation, social work, like other professions, is faced with the challenge of reflecting on its past performance and the possibilities of digitalisation. Digitalisation and its relationship to social work are multi-layered, fluid and complex, and must be understood in context. In this sense, context includes *practices*, *people*, as well as *places* and *premises* where social work takes place (Kirwan, 2019). During the last two decades, a significant number of discussions have been conducted on the topic of digital social work, and e-social work, i.e. the application of technologies in social work (Goldkind et al., 2018; Kirwan, 2019). NASW (2017) also publishes new standards and ethics for the use of technology in social work practice, which argues in favour of the widespread implementation of technologies in this field as well. Globalisation and technological advances are opening up new opportunities for social workers around the world. Structural inequalities, oppression, discrimination, and social exclusion are just some of the human rights issues that social workers deal with in their daily practice. In the context of the digitalisation of social work, some of the questions that arise are how human rights, social justice and social inclusion are practiced and promoted in the online environment. What is the role of social workers when we talk about technology and AI? Are digital services and the implementation of AI in social welfare only available in high-income countries? (see also Reamer, 2013).

Most countries have a social welfare system that strives to build equity, enable social justice and democracy, protect human rights, and provide different opportunities for its citizens. The systems generally provide a wide range of benefits and services due to various circumstances such as poverty, economic crises, climate change, conflict, migration, etc. Despite the diversity and exceptional range of programs, certain common points can be found among them. Basically, all systems function through four stages. The first stage is *assessment*, that is, the identification of users and the assessment of their needs. After that, the user is *admitted* and a certain benefit or service is *provided*. *Monitoring* and *management* were identified as the last step, i.e. the tendency towards the fact that the social welfare program must correspond to the real needs of the users, but at the same time ensure a high quality of service (Ohlenburg, 2020).

Bearing in mind the functioning of the social welfare system, one of the key observations in the context of the digitalisation of social work is that automation (of social services) is still an insufficiently recognised field due to contradictions in the rules, but also due to the complexity of cases in different social services (see also Kirwan, 2019). Regarding the digitalisation of social work, it should be emphasised that technologies do not act in isolation from people, and perhaps this is best explained by the phrase ‘digital dualism,’ coined by Jurgenson (2011). He highlights the dangers of focusing on one side, be it the human side or the technology side. That is, digital and material reality are not separate and actually co-construct each other, even in the domain of social work, which can be seen in *Figure 2*, which shows what needs to be incorporated into digital social work.



Figure 2. Social work skills and knowledge to promote human rights in emerging technologies (Kirwan 2019, p. 446)

When talking about artificial intelligence, as a special branch of technological achievements, it is still quite limited in the field of social work. However, two directions can be noticed in the implementation of digital technologies. The first is *the capacity to store and manage information*, and the second is certainly *virtual mediation as a tool for professional practice*. AI is conceived through algorithms, that is, a set of instructions designed to perform a specific task or solve a problem through a series of steps (Joyanes, 2003).

A study by Engstrom et al. (2020) in the USA, which included 157 public sector institutions in the field of social welfare, revealed only seven cases with a connection between social welfare and the AI system. Mainly, AI has been applied in the assessments of assistance to the homeless (Toros & Flaming, 2018), unemployment benefits (Kirwan, 2019) and child welfare services (Vogl, 2020). Examples of successful application of AI are also visible in Sweden in the domain of automation of social services (e.g. Ranerup & Henriskon, 2020).

However, various studies (e.g., Zhang & Dafoe, 2019) state several caveats regarding the consequences of algorithmic biases when working with humans. One of the biggest risks is the problem of *responsibility and 'explainability'*. If the AI systems recognise that a user should be denied benefits, in practice, citizens will demand that such outcomes be explained to them. However, AI-based outcomes are often non-transparent and not fully explainable because they involve various factors in multi-step algorithmic processes. Therefore, in this context, it is crucial to consider how the discretionary right fits into the framework of various legal regulations, the resolution of complaints and the responsibility of the social welfare system (Engstrom et al., 2020).

An additional risk of the AI application in social welfare and social work is *the misuse of integrated data*. That is, data is often misused for various purposes for which it was not primarily collected. It is precisely for this reason that building trust in artificial intelligence is very important. On the other hand, various surveys (e.g. Zhang & Dafoe, 2019) show that almost 80% of respondents do not trust the ability of government organisations to manage AI systems. Namely, the gathering of information for social welfare programs is a very sensitive field. The 'leaking' of information about someone's income, assets, health or work status can have serious consequences for that person or their family. Namely, safe storage of such data is an essential duty of every social welfare organisation. In case of sharing information with a third party, e.g. service provider of the AI system, data protection should extend to the third party, and protocols for responsible data sharing should be included as the standard part (Ohlenburg, 2020).

The rapid evolution and spread of new technologies (also in the field of social work), as we have seen, have great implications for the en-

joyment of human rights. Indeed, many contemporary challenges are inextricably linked to the growing power of digital technologies. *The Human Rights Council* regularly reviews the human rights implications of new technologies. One of the most profound benefits of the digital age has been to provide a global, open and inclusive platform for the exchange of information, ideas and opinions. However, we have seen that new challenges come with it, including the promotion and protection of human rights. Summing up the above risks and challenges, the following questions need to be answered in different domains:

- *Human rights and well-being* – does AI serve the best interest of humanity and human well-being?
- *Emotional harm* – will AI degrade the integrity of the human emotional experience or facilitate emotional or mental harm?
- *Accountability* – who is responsible for the AI and who will be held accountable for its actions?
- *Security, privacy, availability and transparency* – how do you balance availability and transparency with privacy and security, especially when it comes to data and personalisation?
- *Social harm and social justice* – how can one ensure that the AI is inclusive, without bias and discrimination, that is, aligned with moral and ethical norms and values?
- *Financial damage* – how will we control AI that negatively affects economic opportunities and employment?
- *Legality and justice* – how can one ensure that data gathering and processing by AI is done in a fair and legal manner, is subject to appropriate regulations? In that case, what would those regulations be?
- *Control and ethical (mis)use of AI* – how can we protect ourselves against unethical use of AI, and how can it remain under human control while simultaneously developing and learning?
- *Environmental damage and sustainability* – how can we protect ourselves against potential environmental damage?
- *Existential risk* – how can we avoid an AI arms race? (European Parliament, 2020).

Having the above-mentioned challenges in mind, the incorporation of AI in the field of social work requires a greater engagement of all parties, precisely because of the intersection of technology and human rights (Mathiyazhagan, 2022). *The World Summit on the Information Society* (2003) declares that compliance with the UDHR is essential to building an information society that is inclusive, developmental and people-oriented. In this sense, social workers should collaborate and co-create social policies, collaborate with community members, but also with people who design new technologies, especially in the context of social work.

Finally, it can be concluded that very few studies have been conducted to propose different ways for introducing AI into social welfare and social work. However, it is very clear that the human factor must be taken into account, the legal, managerial and ethical components that must be harmonised. Such an intervention requires a certain reinterpretation and the introduction of new protective mechanisms in the area of policies, laws and regulations that will be focused on new technological processes, including AI. In addition, there is a need for new social policies that would deal with social transformations brought about by new technologies. Also, for the sake of a positive incorporation of AI in the field of social work, it is necessary to create cooperation between social work professionals, computer scientists and other actors in order to prevent the violation of human rights and various biases in artificial intelligence systems.

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ВЕШТАЧКА ИНТЕЛИГЕНЦИЈА И СОЦИЈАЛНИ РАД: ЕТИЧКЕ ДИЛЕМЕ И ИЗАЗОВИ У ЗАШТИТИ ЉУДСКИХ ПРАВА

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Резиме

Област социјалног рада и социјалне заштите мења се у односу на технолошка достигнућа. Вештачка интелигенција засигурно јесте један од механизма који (потенцијално) могу да утичу на унапређење услуга социјалне заштите, олакшавајући уживање основних права и слобода грађана, али са друге стране представља и ризик. Неке од етичких дилема када је у питању инкорпорирање ВИ у област социјалног рада и социјалне заштите јесу и: шта се дешава уколико ВИ и алгоритамско доношење одлука доведе до тога да неко буде у неповољном положају или дискримисан, чије етичке и друштвене вредности су инкорпориране у ВИ, с обзиром на то да свако друштво, систем и/или држава посматрају етику кроз контекст, и ко је одговоран уколико дође до злоупотребе ВИ – да ли је то програмер,

произвођач, крајњи корисници или неко трећи. Наиме, важно питање када се прича о контексту дигитализације социјалног рада јесте и (не)могућност аутоматизације социјалних услуга због сложености случајева и потребе да се дубоко разуме људско понашање. Различита досадашња истраживања (нпр. Торос & Фламинг, 2018) показују да је ВИ и даље врло слабо заступљена и недовољно развијена у овој области.

Глобализација и технолошки напредак дефинитивно отварају нове могућности за социјалне раднике и друге запослене у социјалној заштити. Све ово захтева време, колективну вољу и различите акције како би се дигитализација спрела на адекватан начин уз пуно поштовање људских права.

MONETARY DISPUTES, THE EUROPEAN CENTRAL BANK, AND SOCIAL POPULISM

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Abstract

The subject of analysis in this paper is the identification and analysis of the connection between monetary disputes in which the European Central Bank (ECB) is a participant, and the consequences of negative social populism, which, in practice, can affect the correct understanding of the responsibility and position of the ECB in the concept of monetary management in the European Economic and Monetary Union (EMU). The first part of the paper points to the concept and nature of monetary disputes as a new category of administrative disputes in EU monetary law, as their main features and legal addressees in practice, while the further text examines the advantages and disadvantages of judicial and arbitral settlement of monetary disputes, and discusses the potential legal basis of arbitration settlement in European monetary legislation. The subject of special attention is the monetary legal analysis of ongoing disputes and lawsuits initiated against the highest European monetary institution and their echo (understanding) in the general public. Transparent determination of regulatory competence within the existing organisational structure of the ECB, according to the author, is a *conditio sine qua non* of avoiding the initiation of (un)necessary monetary disputes, but also managing existing ones in a manner that is legally predictable and regulated.

Key words: European Central Bank, monetary law, monetary stability, monetary disputes, social populism.

МОНЕТАРНИ СПОРОВИ, ЕВРОПСКА ЦЕНТРАЛНА БАНКА И ДРУШТВЕНИ ПОПУЛИЗАМ

Апстракт

Предмет анализе у овом раду јесте идентификовање и анализа везе између монетарних спорова у којим учествује Европска централна банка (ЕЦБ) и последица негативног друштвеног популизма који у пракси може утицати на правилно поимање одговорности и позиције ЕЦБ у концепту монетарног управ-

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љања у Европској економској и монетарној унији (ЕМУ). У првом делу рада, указује се на појам и природу монетарних спорова као нове категорије управних спорова *sui generis* у монетарном праву ЕУ, њихова главна обележја и правне адресате у пракси, док се у даљем тесту разматрају предности и мане судског и арбитражног решавања монетарних спорова и разматра потенцијални правни основ арбитражног решавања у европском монетарном законодавству. Предмет посебне пажње јесте монетарноправна анализа текућих спорова и тужби иницираних против највише европске монетарне институције и њиховог одјека (разумевања) у јавности. Транспарентно утврђивање регулаторне надлежности унутар постојеће организационе структуре ЕЦБ, према мишљењу аутора, јесте *conditio sine qua non* избегавања иницирања (не)потребних монетарних спорова, али и вођења постојећих на начин који је правно предвидив и јасно регулисан.

Кључне речи: Европска централна банка, монетарно право, монетарна стабилност, монетарни спорови, друштвени популизам.

INTRODUCTION

Monetary disputes represent a special category of administrative disputes in which the court decides about the administrative and legal nature of the supreme independent monetary institution acts (Hofman, 2015, pp. 2-5). The fact is that in contemporary monetary law, central banks increasingly resemble independent agencies that enjoy a significant place in the country's constitutional order and whose decisions have important implications for the budget and public finances, where their competencies are elaborated by special laws and by-laws. Otherwise, in the consideration of administrative disputes in which the legality of the decisions of state regulatory agencies and bodies is resolved, in the majority of initiated cases, the court decides in favour of state agencies, which over time have become a typical example of the so-called organisations that learn (smart organisations) and that, learning from their own mistakes in the field of public management, have become superior in their work compared to other public authorities, which means that their actions represent a good example for the more successful actions of other bodies (Bajakić, Kos, 2016, pp. 22-34). However, in practice in the EU area, the need for the formation of a special European Administrative Court that would deal with the mentioned issue more adequately is visible, because the administrative disputes themselves have become very specific (especially in the circumstances of Brexit and the public debt crisis).

In considering monetary disputes settled by the court, it is necessary to point out the fact that there are certain similarities in the constitution and organisation of judicial bodies and the highest monetary institution, which are reflected in the fact that both institutions are a reflection of the credibility of the promises that the government made to its citizens, and that the ideological elements of the legislator in both institutions are present in the part that should guarantee their independence in work and

prevent the consequences of possible intimidation by the holders of other forms of government (Marciano, 2011, pp. 155-156). The essential difference concerns the status of the main goals of these two institutions because, in the case of the central bank, the realisation of monetary stability is the economic state that is pursued in general public policy, while the rule of law principle advocated by the court is the fundamental premise for building and public policy. Empirical research, which had as its subject the determination of correlations between judicial independence and independence in the work of the central bank, points to the conclusion that in countries where a higher degree of judicial independence is observed in the work, there are usually institutional solutions that guarantee a greater degree of independence in the work of the central bank. On the other hand, in the organisation of the work of the courts in all countries, there is a multi-level system of protection, regardless of whether it is about disputes from general or special court jurisdiction, while in the case of monetary policy, all decisions are made by the central bank within a single structure that is not differentiated as a judicial one. The difference also exists in the field of agency costs, because judges and the central bank implement the interests that they consider to be the best (not personal, but interests imposed on them by the profession for the sake of preserving public goods such as efficient justice and monetary stability), which does not always have to (and is not expected) to coincide with the interests of those who delegated them, that is, elected them to that position because the good for the sake of the individual (which sometimes has to be 'sacrificed') is something that is implicitly understood in the work of these bodies. When it comes to the jurisdiction of the court, this term refers to the conditions that a private agent must fulfil to access judicial protection when the enjoyment of certain constitutionally and legally guaranteed rights or legal interests are violated. As a special contribution to respect for constitutionality, the court makes *ex-post* evaluations of disputed provisions of the law with the highest legal act, which is the practice in the USA and can be done at any time, while in France there is the possibility of *a priori ax ante* constitutional evaluation of a law that has not yet been adopted, which acts preventively to preserve the principle of legal certainty, because those laws for which non-compliance is determined will never be adopted (at least not in their original form). When it comes to the central bank's jurisdiction, it refers to the already unified monetary clusters that concern price stability and borrowing (Ibid).

Today's monetary policy of the EU is not just a simple set of administrative activities that must be brought under judicial control to realise and protect individual rights but implies the use of complex techniques and models aimed at sustainable and humane economic growth. The ECB, as the main subject of such a policy, must act *pro futura* and bear responsibility for deviations from the goals set by the single mone-

tary strategy. The problem with the efficient resolution of monetary disputes stems from the fact that judges have a retrospective view of the resolution of the disputed factual situation, which is quite expected, because the court cannot guess what the future behaviour of monetary agents will be, nor can it have jurisdiction over it. It is from this that the weakness of the argument in the judgment concerns the arbitrary behaviour of the ECB during the debt crisis because such a thing cannot be determined decisively. It is interesting that the constitutional court of Germany, for the first time in its history in the case of the evaluation of the OMT program, referred the disputed issue to the European Court of Justice for resolution, which only speaks in favour of the fact that it was probably the most serious monetary dispute in the new EMU (subjective view of the author), which requires the synergy of actions of national and supranational judicial instances (Dimitrijević, Golubović, 2020, pp. 15-16).

COURT VS ARBITRATION SETTLEMENT OF MONETARY DISPUTES - AN OVERVIEW

The procedural legitimacy of the ECB gained essential elements of its manifestation during the global economic and financial crisis, which in practice coincided with the adoption of new institutional models of macroeconomic management aimed at strengthening the entire economic system of the member countries. Until the outbreak of the debt crisis, the procedural identification of the ECB had a more sporadic character and was limited to the consequences of inadequate macroeconomic dialogue with other community institutions, primarily with the European Commission.

With the adoption of new institutional mechanisms, there is also a significant redefinition of the basic principles of European monetary law (primarily in the area of the scope of the *lex monetae* in monetary traffic, the extraterritorial application of monetary sovereignty, and non-compliance with the provisions on collective responsibility for public debt, i.e. a different view of the content of the *lex contractus* principle), which caused far-reaching monetary disputes. By analysing these cases from court practice, we can observe the best confirmation of the institutional, functional, and financial independence of the supreme monetary institution of the EU and from the outcome of the disputes identify its indisputable authority in shaping and derogating the norms of monetary law, where monetary stability appears as a *conditio sine qua non* of the economic stability of the entire eurozone. As the settlement of monetary disputes in EMU law is still quite complex, in theory, the possibility of an alternative way of settlement of disputes based on practice in international monetary law is considered. When resolving monetary disputes, the arbitrator is in a position that does not differ much from the position of a judge, but by de facto validating the specific monetary choice of one par-

ty in the dispute as correct, he noticeably enjoys greater discretionary powers than the judge, whose work is determined by the existing practice in that area (Dimitrijević, Golubović, 2018, p. 10).

The role of an arbitrator in the field of monetary disputes in the EMU could have different legal and political consequences when it comes to the relationship between the ECB and Germany as the leading member of the Eurozone. The history of European monetary disputes dates back to the lawsuit that the ECB filed against Germany in 2003, considering that it has the right to a refund of the taxes that it paid on its territory for the performance of operations within its jurisdiction to purchase all necessary goods and services, especially the rental of movable and immovable property. The ECB based its claim on a rational economic assessment of the price it paid for all the mentioned activities (considering that it could easily prove it), referring to the provisions of the Statute of the ESCB and the Protocol on the Privileges and Immunities of the Institutions of the European Communities (1965). The European Court of Justice rejected the request of the ECB and ordered it to pay the costs of the procedure in full, so it is not difficult to see that the application of an out-of-court settlement would be more than desirable. At this point, we must ask whether the application of arbitration in the case of the dispute that Germany initiated against the ECB due to the application of measures on the purchase of bonds on the secondary financial market (2013) could contribute to a more efficient resolution of the dispute. Namely, this dispute lasted for three years and ended with the decision of the European Court of Justice which confirmed the institutional and functional independence of the bank in the field of monetary policy, but at the same time, such a decision threatened the success of the measures in the field of the already fragile macroeconomic management of the EU economic system. An out-of-court settlement could have avoided the deepening of antagonism in the relations between the ECB and the central banks of the ESCB members and, in the spirit of cooperation, continued the path towards protecting the values and goals of the single monetary policy (i.e. the benefits of EMU accession).

Namely, in his decision, the arbitrator recognises the legal effects of the monetary choice (by which is meant the currency in which the contractual performance will be realised) while also determining the connection with other currency clauses (for example, the use of a third currency for accounting purposes or the value currency as it once was 'eqi' of the European Communities or today special drawing rights of the International Monetary Fund – IMF). However, in practice, arbitrators are very careful when implementing their decisions due to the sensitive nature of monetary disputes themselves. In modern monetary law, money is not a good whose users have free will in terms of its use, but the legal concept of money is governed by national monetary regulations that have the

character of *ius cogens* norms. Monetary laws today, as we have pointed out several times, are treated as an integral element of the so-called 'lois de police' which best confirm the importance and place of monetary stability as a crucial public good of every state.

The essential difference between judicial and arbitral settlement of monetary disputes is reflected in the fact that judges are obliged to protect their national currency, while arbitrators enjoy full freedom and treat all currencies in an equal way, which, in our opinion, is very important for adequately elucidating the legal-economic of the factual situation in international monetary disputes (Dimitrijević, Golubović, 2018, p. 241).

MONETARY DISPUTES AND SOCIAL POPULISM EFFECTS

In the current practice and analysis of the settlement of monetary disputes, the following classification of lawsuits directed at the work of the ECB (i.e. central banks within the ESCB) can be made between: actions for annulment of ECB decisions; actions due to silence" of the monetary administration; actions against decisions made by the ECB within the field of application of the Single Resolution Mechanism (the so-called second pillar of the banking union), within which the following are further distinguished as lawsuits for the annulment of decisions on the obligation to pay the contributions of member states for the common funds of the Single Resolution Fund, actions related to the bankruptcy of the Spanish commercial bank Banco Popular Espanol S.A.; actions related to the actions of a group of commercial banks (ABLV Bank of Luxembourg), conduct due to other actions of the ECB within the field of application of banking union rights (related to inadequate implementation or complete absence thereof in the field of adopted directives), and proceedings of national courts in connection with the legislation of banking union subjects, more precisely, national assessments of their legality (Smits et Al, 2022, pp. 1-5).

The aforementioned classification of monetary disputes indicates their diversity and great practical importance. Also, there is a noticeable tendency to increase the appearance of these disputes in the overall practice of the ECJ, because by analysing the aforementioned database of completed and current court cases, we can notice that there are currently 71 court proceedings before the European Court of Justice, the basis of which is a request for the annulment of ECB decisions; two cases that were indicted by the lawsuit due to failure to take actions by the ECB; 78 cases concerning the request to cancel the decision of the Single Sanitation Board within the second pillar of the banking union; 97 cases initiated by the bankruptcy of a Spanish bank; and 4 cases related to lawsuits related to the operations of a group of banks and 11 disputes related to the so-called other procedures within the banking union (Ibid). It would be

wrong to assume and conclude based on the initial analysis of data from the database that the ECB often makes mistakes and violates someone's rights (as opposed to earlier periods when there were more cases in which the ECB was the prosecutor), but it is connected with the influence of populist thoughts on what kind of its status and obligations should be, which are generally not under the generally accepted principles of the science of monetary law, because they do not have their own legal and economic logic, but are used as an instrument of political campaigns and transfer of responsibility on the international political scene.

It is interesting that the problems that were observed during the global financial crisis, and then the crisis caused by the Covid-19 pandemic, led to a kind of monetary legal phenomenon, which is reflected in the expansion of the competencies of the ECB (Dimitrijević, Golubović, 2021, pp. 1-13), on the one hand, but also in the process of strengthening the positions of national central banks, on the other hand, which is a monetary paradox, taking into account the fact that the member states of the eurozone cannot conduct their monetary policies with discretion, that they count on the mechanism of adjusting exchange rates in circumstances of economic disturbances and somewhat reduced national monetary sovereignty because almost all components have been transferred to EU level (Athanassiou, 2014, pp. 27-46). The reason for this is the fact that although the members of the Bank's Executive Board are obliged to take into account the community interests, and not the interests of the member states that proposed them, they *de facto* remain functionally connected to their national central banks due to the very method of election and appointment which is determined by the provisions of the national monetary legislation (Van der Sluis, 2022, pp. 20-37). Recent events related to the actions of the German central bank best confirm this because the implementation of supranational measures of the unified monetary policy ultimately depends entirely on the readiness of national central banks to apply them (with or without restrictions) in domestic monetary traffic. The unwillingness (disobedience) of at least one national central bank (which was previously unthinkable) disrupts the balance of distribution of monetary prerogatives in the EMU and carries a latent danger of undermining the decades-long (we would add good) results in the field of monetary policy coordination. Also, we can notice that in ECJ practice, there is an increasing number of cases in which passive legitimisation of the ECB is implemented (that is, proceedings in which it is the defendant), which can be explained by the growing populism that negatively affects its independence. Thus, in monetary law pieces of literature, it is indicated that the rise of social populism against the positions of central banks, in general, indicates the dissatisfaction of citizens regarding the manifestation of its institutional independence in work because they understand it in the absolute meaning of that word (which is, admittedly, a consequence of

earlier legal decisions on the work of the central bank, which did not contain provisions on liability). Increased initiatives to initiate monetary disputes are also a direct reflection of the dissatisfaction of citizens who (especially in crisis conditions) see the central bank as the culprit on duty for all problems in the economy of a country and express opposition to its 'untouchable position' for them, which in the extreme case can be very dangerous because the question is how to build legal mechanisms that "protect the guardian of monetary stability" from the citizens themselves (Goodhart, Lastra, 2018, pp. 49-68).

In everyday life, populism is most often used in a pejorative sense and signifies an essential disagreement with the central position of the libertarian theory about the advantages of the free movement of labour, capital, goods, and services (in other words, the basic principles of the EU internal market) between nations, which is useful and desirable for their economies and society. In the context of public management (and therefore the monetary operations of the state), a subject that, after being democratically elected or appointed, tends to eliminate the mechanisms of accountability to parliament (political control), which is characteristic of all democratic states today, behaves populistically. Political and legislative control is necessary to evaluate and evaluate the achieved results against the set goals and is therefore completely opposed to the autocratic model of behaviour that is close to populist attitudes.

Populism in a pejorative sense represents a distortion of the social contract theory developed by *Jean Jacques Rousseau*, where it is clearly emphasised that sovereignty is derived from the will of the people, not the monarch because citizens are the principals of sovereignty who transfer it to the state through free and planned association as a new entity of its own free will (which is the basis of every contract). When countries find themselves in circumstances of economic crises that affect the lives of citizens in all aspects, the unequal distribution of wealth, and income and the slow (unplanned) reaction of the state always cause the "original will of the people" to be questioned (Piketty, 2013, pp. 50-55). That review concerns the legitimacy of the central bank's actions, the mandate to undertake certain measures and actions, and the issue of separating the personalities of the persons who manage the bank from the legal subjectivity of the central bank itself. The rise of populist ideas is questioning the legitimacy of the measures taken by the ECB, with the fact that it is necessary to make a distinction between the concept of legitimacy in a formal and social sense.

Legitimacy in the formal sense refers to the patterns, applied skill, and the way of the creation and formation of the central bank, which must undoubtedly be a democratic act, either by a legislator, a constitutional provision, or an international agreement (as it is in the case of the EU). Social legitimacy reflects the system of public support, which is a condi-

tion for the survival of the existing legal solution that regulates the bank's position. In circumstances where social support is declining, legal provisions must likely be changed if they do not already enjoy the trust and support of the public on how to regulate the above-mentioned issue. Although these assumptions are justified in a certain sense, the monetary legislation cannot be changed too often unless there are justified reasons for this, because central banks have never been and cannot be democratic institutions chosen by the will of citizens in the narrower sense of the word, because they are fundamentally highly technocratic institutions in which the representatives of the political authorities also have a certain position (status), although they certainly do not have the task of simply administering entrusted tasks based on predetermined schemes which, by the way, is characteristic of classic administrative bodies (Lastra, Miller, 2001, pp. 158-160).

Therefore, we believe that it is wrong to observe and analyse the actions of the central bank through the sphere of administrative procedure, which is otherwise present in the field of the domestic legal academy, where the establishment of monetary law as an independent scientific discipline happened unjustifiably late, which is confirmed by the fact that it is present in the syllabuses of legal studies at only one law school in the country.¹ Such outdated, and we would add, very backward understandings make it difficult for legal practitioners to contribute to the foundation of modern monetary legislation, as well as to effectively resolve disputes that directly or indirectly concern the implementation of the *lex monetae*. When it comes to the mandate to perform tasks entrusted by law, the tasks of the ECB correspond to the settings developed by theorists of German economic law, where the term 'Ordnungspolitik' refers to the economic-political framework that represents the common denominator for the actions of different political parties. In the field of central banking, the term refers to the task of the central bank in maintaining price stability, which has been its basic task for a long time. Nevertheless, in the last decade, there has been an expansion of the basic tasks of the Bank and the need for purification and measurement of contributions in the realisation of other goals from the sphere of fiscal, foreign exchange, and environmental policy. The exercise of prudential control, financial audits, and crediting of government debts have led to a change in citizens' expectations, more precisely, citizens now expect much more from their central banks and closely monitor their contribution to solving all the economic problems of a country, which is completely unfounded and irrational. Taking into account the previously given explanation that the central

¹ Monetary law, as an independent branch of the legal system, is studied within the special syllabus by the Chair for Law and Economics at the Faculty of Law, University of Niš. See: www.monela.ni.ac.rs.

bank is not a democratically elected institution (like the parliament) but a narrowly specialised holder and addressee of monetary sovereignty *de lege artis*. When it comes to the responsibility of the person who manages the central bank, it is very challenging to create such a system of solutions that guarantee complete professional independence and thereby prevent the conflict of interest that occurs if the employees of the central bank are simultaneously representatives and agents of the current executive power. This means that the central banker (if for this analysis we call the person who works in it that way) cannot be a financial advisor to the government or some other private or public agency, nor should he take loans from private banks during his function in the central bank, where the only exception may be the performance of a professorship or other similar academic positions at universities.

Speaking about the aforementioned legal bridges, the well-known judge of the ECJ, *Lars Bay Larsen*, states that “the symbolism of bridges in monetary law is not accidental, because they, like real buildings, are built to last a long time and resist the test of time, where they must maintain durability during economic upheavals while emphasising that legal bridges must be built of legitimate substance where the supervision performed by the European Court is of crucial importance for the ECB’s legal bridges” (Bay Larsen, 2019, pp. 47-49). Although the ECJ carries out effective and efficient (normative) supervision over the decisions of the Commission, the supervision over the decisions of the ECB is relatively recent and has become more intense after the adoption of new models of macroeconomic management in the EMU, which represent the EU’s response to the consequences of the crisis and the way of filling legal gaps that were initiated on the initiative of the European Council.

In practice, a distinction can be made between *two* different procedural monetary law situations, namely when a subject is an act of secondary legislation (soft law) or the legality of an administrative act considered based on Article 263 of the EU Treaty before the General Court, with the possibility of submitting an appeal to the ECJ or the decision of a national administrative body or agency before the court of a member state, but on that occasion, it was decided based on the application of a wrong provision of EU law, which is why the ECJ must intervene based on Article 267 of the EU Treaty, which invalidates the disputed community source. Generally speaking, regardless of the aforementioned practice of the ECJ in resolving not only monetary disputes in which the actions of the ECB are considered but also all disputes in general, it should be noted that the Court is not bound by the procedural situations mentioned above and that it determines the degree of judicial exercise supervision (whether it will be more or less formal or substantive). In determining the ‘lower’ and ‘upper’ limits of the degree of supervision, the Court certainly takes into account:

(a) The degree of complexity of the disputed factual situation that is defined by the appeal (that is, the Court is guided by the concrete form of the so-called manifest error of assessments of the first-instance authority when considering the necessary degree of influence in the specific case (which, in our opinion, has sense, because monetary disputes can differ significantly in terms of their severity and topicality); and

(b) Determinism of the very facts based on which positive EU law was adopted and applied, which can very often be lost sight of (especially when ECJ decisions are discussed in public, as was the case with the OMT verdict, for example). In applying the provisions of firm law, the court can only be guided by the facts on which that law was based at the time of writing the specific norm of the primary legislation, and if the circumstances and facts on which a different decision should be formulated have changed (which has become more frequent recently takes place), it is first necessary to revise the provisions of the primary legislation, because it is the *conditio sine qua non* of every judicial decision (Bay Larsen, 2019). However, in the monetary law literature, one is increasingly coming across understandings according to which it is considered that the European Court of Justice is bound by certain objective factors when exercising judicial supervision in a bankruptcy case, which includes the decision and intention of the community legislator, in the sense that the linguistic and logical interpretation of the provisions of the founding agreements, which determine the jurisdiction of certain institutions, clearly indicate a certain recognition (guarantee) of freedoms in terms of decision-making within their actual jurisdiction (which we can note is the case with the attitude of the ECJ towards the work and powers of the European Central Bank). Also, it refers to the complex factual situation of the specific case, which is connected with the use of certain macro and microeconomic models, economic forecasts, and similar economic categories and institutes (which is close to the work of the ECB and the implementation of a unified monetary strategy). It includes certain political choices, in the context of the EU institution's field of action, which must take into account not only the legal, but also the political, economic, and social environment and interests (and sometimes pay attention to them more than others) because the current problem requires it (situation) on the market (of course, we mean the existential reasons for the survival and preservation of the market, i.e. the EMU, which was the case with the judgment on the ESM, because a different judgment at that moment would have been devastating for the achievements of the monetary union), And last, but not at least the impact of a third party by a potential decision, taking into account the application of Article 47 of the EU Charter on Human Rights, according to the rule that the more far-reaching the degree of impact on third parties, the ECJ will carry out supervision at a

deeper level because the decisions affect the quality of life of citizens and the possibility of enjoying guaranteed rights.

How negative social populism is counterproductive in central banking is best illustrated by the fact that the work of the ECB in the circumstances of approving financial support for Greece was at one time characterised by the public as unpopular monetary behavior (Stoffels, 2019, pp. 58-59) which is was completely unjustified and, to put it mildly, an inappropriate statement, taking into account its position and work not only in the EMU but in the entire EU since the first years of its existence (Raffert, 2017, pp. 65-66). The reluctance of politicians who approve public loans and insufficient knowledge of the work of the central bank has always been a fertile ground for the development of negative social populism, which is usually activated in periods of crisis when it is forgotten (intentionally or accidentally, everything that the previous institution whose work is the subject of criticism has done as good).

Equally dangerous attitudes such as those embodied in claims that the economic situation in the world can be improved by decentralisation and denationalisation of the achieved communitarian economic unity (even if it is not complete), there are opposing views that all barriers to full global economic integration should be (absolutely) removed, which is a reflection of the opinion of supporters of intensive globalisation, because economic theory shows that both approaches are overcome (Dombret, 2020, pp. 273-274). The only correct way of international economic coordination remains the one founded by *Deny Rodrick*, in which it is not possible to simultaneously achieve economic and foreign trade liberalisation while preserving full economic sovereignty and all democratic values (the so-called principle of the impossible trinity), but it is necessary to set priorities. The establishment of certain compromises is necessary, but at the same time, it is important to offer certain 'compensations' to those who have borne the greatest burden of economic globalisation, because it is not free either, and in the abolition of barriers to the free flow of goods, capital, services, and people, certain limitations must always exist (whether they are motivated by the protection of human rights or some other values). An indicative example from ECJ practice that confirms the aforementioned problems is the judgment in the *Weiss case*. This judgment, according to Judge Lars, indicates a clear distinction between the exercise of limited control and the absence of control where the Court in this case could pragmatically examine the ECB's motivation behind the said decision. Also, in the specific case, the Court recognised the ECB's right to extensively set and determine conditions for price stability within the framework of the entrusted mandate in the field of the inflation rate - 2% below the established original target determined by the price convergence criterion (Dombret, 2020, p. 295). The subject of the analysis in the *Weiss case* is the request for a preliminary ruling on the legality (permiss-

sibility) of the ECB decision on the program to purchase public sector securities on secondary markets (ECB Decision 2015/774), which was later amended by the Bank's decision of 11 October 2017 (C-493/17, *Weiss and Others*). Namely, in 2014, the ECB's executive board decided to start the implementation of the asset bond purchasing program (ABSPP), and later add the purchase of public sector assets on the secondary financial market (public securities purchasing program - PSPP). Ratio PSPP is the reduction of financial risk to a more acceptable level, which should ease the existing monetary conditions, especially those concerning lending to non-financial economic entities and households (Decision (EU) 2015/425; Decision (EU) 2020/44; Decision (EU) 2017/1361 and Decision (EU) 2017/1361).

By adopting this program, the ECB wanted to increase aggregate investment spending (and thus total public spending) in the eurozone, achieving the first goal of keeping the inflation rate in the range of up to 2% in the medium term. The ECB considered that in the current monetary environment, where key interest rates are close to their lower limits and where the existing programs for the purchase of private sector assets have not sufficiently contributed to solving downside risks, the implementation of the program in question is of essential importance for the protection of the monetary order and this, first of all, through the function of balancing the bond portfolio (Decision EU 2015/2101). The request for an assessment of the legality of the program was sent by Heinrich Weiss and others to judicially interpret the applicability of various decisions of the ECB in the monetary jurisdiction of Germany, the contribution (obligations) of the German central bank in that field, as well as to determine the omission of the Bundesregierung (federal government) and the Bundestag (parliament) in the same context². On the occasion of the verdict, the ECJ Media Office received a large number of questions from interested citizens regarding its content, as well as the NSUS verdict on the legal nature of the PSPP program. On that occasion, the office clearly emphasised that it never comments on the judgments of the national court and reminded that following the established judicial practice of the ECJ, its judgment rendered in the previous proceedings binds the national court when it decides in the main proceedings.

Also, to ensure uniform application of Union law, only the Court - established by the member states for this purpose - is competent to determine that an act of a Union institution is contrary to Union law and that eventual differences between courts in member states regarding the validity of such acts could threaten the unity of the legal order of the Union and call into question legal certainty. Like other bodies of member states,

² See: <https://cuia.europa.eu/juris/documents.jsf?num=C-493/17>, last retrived 01.06.2022.

national courts are obliged to create conditions in domestic traffic for the full effect of Union law, because this is the only way to ensure the equality of member states. Although the ECJ in the specific case found that the ECB did not exceed (violate) the limits of the entrusted powers, the German Federal Constitutional Court (GFCC) refused to apply the decision of the ECJ in its territory, which, once again, became a current controversy about the so-called the theory of constitutional pluralism. There are certain similarities in the actions of the GFCC and the actions of American courts in the period before the Civil War when the national courts of the member states could choose which segments (solutions) of European continental law they wanted to respect and which they could ignore in the proceedings, which explains the so-called nullification theory (Avbelj, Komárek, 2012, pp. 1-10). Constitutional pluralism is a legal doctrine that deals with real or perceived conflicts between national constitutions and international law, as embodied in treaties, international dispute settlement mechanisms, or the European Union. The literature states that the doctrine of constitutional pluralism, in general, is very useful for understanding the legal nature of the EU because it emphasises clear distinctions between the concepts of the so-called evolutionary and revolutionary constitutionalism (Lukić, 2013, pp. 1705-1718). Nevertheless, some authors emphasise that taking into account the characteristic architecture of the EU, the applicability of the model of evolutionary constitutionalism seems more appropriate academically, because evolutionary constitutionalism at the same time tolerates divided sovereignty (which further means the conceptual separation of sovereignty from the state since the EU cannot be considered a state).

In literature so-called mutually assured discretion is a concept that proposes as suitable for understanding the operationalisation of the paradox of constitutional pluralism in the current practice of the European legal space (Goldmann, 2018, p. 339). It states that this concept is commensurate with postmodern normative epistemology (which is non-Kelsenian and accepts that constitutionality is not only what is found under the normative text) and emphasises that in EU law there is no neutral (objective) basis from which to authoritatively decide on issues of primacy, superiority or primacy in a way that is permanent and unchangeable. The ensured discretion relies on interdependent legal concepts that regulate the relationship between the legal order of the EU and the member states (vertical relations), that is, issues between the spheres of competence of different actors at the European level, such as the ECB and the ECJ (horizontal relations). The usefulness of the concept is reflected in the fact that it enables the emergence of a rational discourse between different legal orders (EMU member states) or spheres of competence, while at the same time encouraging firm self-discipline with each legal order (or actor). In a broader context, mutually assured discretion belongs to the

form of the so-called harmonised discursive constitutionalism, which has its foothold in the legal order of the Union, but also of the member states. At the EU level, it manifests itself through the application of the principle of proportionality, while at the level of the member states it corresponds to the principle of *Europafreundlichkeit*, which was confirmed in the so-called Maastricht judgment.

In circumstances where the national judicial authority considers that the implementation of the ECJ judgment on its territory would lead to a violation of the so-called ‘eternal and untouchable constitutive elements’ of national sovereignty, the Court must try to inform the representatives of the executive and legislative authorities with its position that it is necessary to work on constitutional changes (which is more difficult to achieve in practice) or to start work on an initiative to change the community norm (which led by the ECJ when making its decision). In circumstances where the previous two options are impossible, the only option left at your disposal is to initiate the procedure for leaving the membership. The very refusal to apply the ECJ ruling is in a certain sense and inadmissible, especially in the field of monetary law, because Germany, as a leading EU member state, has previously succeeded in relativising the scope of certain adopted standards (the example of non-compliance with the original fiscal rules from 1998 and the failed attempt of the Commission to consolidate the action of the Council on that plan (*Commission v Council of European Union*, C-176/03)³). It is interesting that according to the principles of constitutional monism, which has dominated academic political and legal thought for centuries, all law and political power of a territory derives “in some ultimate sense from a single and final hierarchical source of constitutional authority, such as the sovereign people of that territory and its constitution” (Jaklic, 2014, pp. 10-15). During the last twenty years, some leading European constitutionalists, however, have begun to argue that the new Europe goes beyond the monist paradigm and opens the door to an entirely new constitutional vision. According to constitutional pluralism, the constitution of national states (their peoples) and the European constitution are ultimately equally independent sources of constitutional authority that overlap hierarchically on a common part of the territory. In the EMU, during the first two decades of its existence, there were no such reviews, but the crisis circumstances and the constant evolution of the ECB’s competencies greatly in-

³ Before the outbreak of the financial crisis, the involvement of the Court in the settlement of monetary and fiscal disputes (although not so frequent) had significant implications for the normative arrangement of the EMU. The initial monetary dispute was initiated by the fiscally irresponsible behaviour of France and Germany (which are among the main members of the EMU) back in 2002-2003 when they were faced with serious problems related to the maintenance of financial and fiscal convergence criteria.

fluenced the appearance of similar reviews in EMU law as well, which, in our opinion, is not a suitable and applicable system of analogy, because the law The EMU, as well as the ECB law, is a *sui generis* law that took shape in ‘necessity’ and did not have enough time for legal-philosophical and legal-ideological tests and premises, as was the case with (general) EU law, which was formed in phases in carefully planned time stages and freed from the factors that made the right of the ECB more consistent in the period from 2010, when the (re)revolutionary path of its mandate begins.

The conclusion that has been emphasised a lot lately in the literature of monetary law points to the fact that the judicial control of the legality of ECB acts (regardless of whether it is carried out by the ECJ or the German Constitutional Court), can compensate for the lack of democratic credibility for undertaking them, because neither judges, the same as the employees of the ECB were not democratically elected by the citizens but were appointed to the aforementioned positions (therefore, a non-democratically elected institution cannot, through its control, guarantee and review the level of democracy in the acts of another similarly non-democratically elected institution (De Boer, Van T’ Klooster, 2020, pp. 1689–1724). Unlike the ECJ, which practices the status quo and leaves the ECB to determine and move the upper limits of its mandate according to economic conditions, the German Constitutional Court requires detailed explanations from the ECB for specific actions, to establish whether it has considered all the negative aspects of its actions. From a formal and legal point of view, the only correct path for the ECB’s future behaviour per the given powers is to revise them (change the founding acts, because the existing mandate in legal norms is written according to the monetary paradigm that was dominant in the eighties of the last century). In this period of development of monetary legal thought, monetary policy in the technical sense was often interpreted as something exceptional, untouchable, and separate from fiscal policy, which greatly influenced the (negative) attitude of citizens towards the central bank. It was a period of emphasising the importance of direct control of monetary aggregates, as opposed to the use of foreign exchange instruments, when it was considered that price stability was a sufficient condition for maintaining overall economic stability (Friedman, 1968, pp. 1-17). In this sense, the question arises why the main community institutions do not raise the issue once but leave the ECB to wander on its own on the normative terrain of jurisdiction that has not been decisively established.

CONCLUSION

Taking into account the connection between the current disputes and the reactions of citizens, it is important to point out that the legal subjectivity of the ECB is very developed and specific, which is not so sur-

prising considering its role in the international monetary order. The institutional structure of the ECB, since the initial years of its establishment, has always developed and adapted to current events on the monetary scene, both in terms of formal and essential elements, which greatly influenced the evolution of its competencies, which in the first years of the Union was built based on classic monetary positions on what the tasks of the central bank are and how its operations should be organised, through the modernisation of classic postulates with new tasks from the field of fiscal and other segments of general economic policy, to the acceptance of completely new (for some theorists somewhat radical) positions on the conception of the ECB as its legislator whose law exists outside the EU community body and exists independently of it (or at least on an equal footing with it. The jurisdiction of the ECB in the field of creating so-called soft legislation is of inestimable importance for the science of modern monetary law because their factual effect in legal traffic is far from the usual linguistic meanings of the ‘soft’ attribute included in the generally accepted classification of legal acts. The guidelines, instructions, measures, announcements, understandings, and programs applied by the European Central Bank represent indispensable and indispensable factual material for filling legal gaps in EMU regulations that cannot be replaced by any other type of legal action. The primary monetary legislation was not successfully implemented during the crisis due to its rigidity and excessive formalism that would allow it to change and adapt to the newly created circumstances (which did not exist at the time of writing the solution contained therein), but also the problem of harmonising the work and behaviour of the various entities participating in its adoption. The ECB, through its actions in moments of crisis management, showed its readiness to include the problem of social cost in its programs and thereby realise its operations in a ‘more humane way’ and the entire concept of EU monetary policy to provide the much-needed ‘human component’ that provides justification for the economic categories contained in legal instruments and ennobles with a kind of spirit.

ACKNOWLEDGEMENT. The paper was created as a result of funding from the Ministry of Science, Technological Development and Innovation, under the Contract registration number 451-03-65/2024-03/200120 dated 05.02.2024.

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МОНЕТАРНИ СПОРОВИ, ЕВРОПСКА ЦЕНТРАЛНА БАНКА И ДРУШТВЕНИ ПОПУЛИЗАМ

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Резиме

Правни субјективитет Европске централне банке (ЕЦБ) је веома развијен и специфичан што с обзиром на њену улогу међународном монетарном поретку и није толико изненађујуће. Институционална структура ЕЦБ се од почетних година њеног оснивања увек развијала и прилагођавала текућим збивањима на монетарној сцени, како у погледу формалних, тако и суштинских елемената што је у великој мери утицало на еволуцију њених надлежности која је у првим годинама деловања ЕУ била изграђена на темељу класичних монетарних поставки о томе шта је су задаци централне банке и како треба бити организовано њено пословање, преко осавремењавања класичних постулата новим задацима из терена фискалне и других сегмента опште економске политике, до прихватања потпуно нових (за неке теоретичаре помало радикалних) ставова о поимању ЕЦБ као властитог законодавца чије право постоји изван комунитарног правног корпуса ЕУ и егзистира независно од њега (или барем равноправно са њим).

Монетарни спорови представљају посебну категорију управних спорова у којима се решава о поступању централне банке, тачније, одлучује се о управноправној природи аката врховне независне монетарне институције где се као претходни

услов јавља поседовање специјализованих правничких знања из проблематике јавног монетарног управљања. У разматрању монетарних спорова од стране суда, потребно је указати на чињеницу да постоје одређене сличности у начину конституисања и организовања правосудних органа и највише монетарне институције, а које се огледају у томе да обе институције јесу одраз кредибилитета обећања које је влада дала својим грађанима и да су идејни елементи законодавца код обе институције присутни у делу које треба да им гарантује независност у раду и спречавање последица евентуалног застрашивања од стране носиоца других облика власти. Занимљиво је да су проблеми који су се уочили током глобалне финансијске кризе, а потом и кризе проузроковане пандемијом Ковид-19 довели до својеврсног монетарноправног феномена који се огледа у ширењу надлежности Европске централне банке, са једне стране, али и процесу оснаживања позиција националних централних банака у еврозони, са друге стране, што јесте извесни монетарни парадокс узимајући у обзир чињеницу да државе чланице еврозоне не могу дискреционо водити своје националне монетарне политике и да рачунају на механизам прилагођавања девизних курсева у околностима привредних поремећаја и донекле умањени национални монетарни суверенитет (јер су готово све компоненте пренете на ниво ЕУ). Поменуто само потврђује тезу о „животности“ проблематике монетарног права ЕУ и права ЕЦБ које се у кризним моментима прилагођава и ослушкује потребе својих грађана на начин који штити њихово право на монетрану стабилност као јавно добро, право на чврсту валуту и очување кредибилитета и вредности заједничке монетарне политике.

THE REPRESENTATION OF MYOCARDIAL INFARCTION IN THE FILM “BALKAN SPY” IN THE FUNCTION OF SHOWING THE CULMINATION OF THE NARRATIVE OF SOCIAL REPRESSION

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Abstract

Myocardial infarction is a heart disease primarily defined by cardiology as a branch of medicine. In addition to medicine, psychology made its contribution to a broader understanding of this disease. Therefore, the discourse of medicine approaches myocardial infarction by following objective indicators, and the discourse of psychology by following subjective experiences. The point of reconciliation of the opposing positions is sought in this work from the point of view of cultural studies. They provide a basis for viewing the same object of observation within a certain media format through theories of representations, but also the theoretical basis of medicine and psychology. Starting from the mentioned platform, within this work we will analyse different positions, functions and the narrative of the media representation of myocardial infarction in the feature film “Balkan Spy” using the method of content analysis. The aim of the paper is to examine, analyse and describe the way in which the observed feature film constructs and produces media narratives about myocardial infarction, as well as what discourse strategies media workers resort to when contextualising myocardial infarction and people suffering from this disease.

Key words: the movie “Balkan Spy”, myocardial infarction, media representations, psychological characteristics of personality.

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РЕПРЕЗЕНТАЦИЈА ИНФАРКТА МИОКАРДА У ФИЛМУ „БАЛКАНСКИ ШПИЈУН“ У ФУНКЦИЈИ ПРИКАЗА КУЛМИНАЦИЈЕ НАРАТИВА ДРУШТВЕНЕ РЕПРЕСИЈЕ

Апстракт

Инфаркт миокарда је обољење срца које првенствено дефинише кардиологија као грана медицине. Поред медицине, свој допринос ширем сагледавању ове болести дала је психологија. Дакле, дискурс медицине прилази инфаркту миокарда водећи се објективним показатељима, а дискурс психологије пратећи субјективна искуства. Тачку помирења супротстављених позиција овај рад тражи у становишту студија култура. Оне пружају основ за сагледавање истог објекта посматрања у оквиру одређеног медијског формата кроз теорије репрезентација, али и теоријске основе медицине и психологије. Полазећи од наведене платформе, у оквиру овог рада анализираћемо различите позиције, функције и наратив медијске репрезентације инфаркта миокарда, у играном филму „Балкански шпијун“ користећи метод анализе садржаја. Циљ рада је испитивање, анализа и опис начина на који посматрани играни филм конструише и производи медијске наративе о инфаркту миокарда, као и којим дискурским стратегијама прибегавају медијски радници и раднице при контекстуализацији инфаркта миокарда и особа оболелих од ове болести.

Кључне речи: филм „Балкански шпијун“, инфаркт миокарда, медијске репрезентације, психолошке карактеристике личности.

INTRODUCTION

Myocardial infarction is a heart disease that most often occurs suddenly, accompanied by characteristic and recognisable physical symptoms, and results in a high mortality rate. Due to its nature, localisation, causes of occurrence, dynamics, methods of diagnosis and treatment, as well as risk factors, myocardial infarction is a phenomenon that is primarily defined by cardiology as a branch of medicine. In addition to medicine, psychology has made its contribution to a wider understanding of this disease - which is primarily reflected in the characteristics and structures of the personalities that are more vulnerable to the onset of myocardial infarction, but which also recover more easily after experiencing it. Therefore, the discourse of medicine approaches myocardial infarction by following objective indicators, and the discourse of psychology by following subjective experiences. The point of reconciliation of the opposing positions is sought in this work from the point of view of cultural studies. They provide a basis for viewing the same object of observation within the chosen media format through theories of representations, but also the theoretical basis of medicine and psychology, that is, those elements of the aforementioned discourses that deal with the topic of myocardial infarction. Starting from the mentioned platform, within this work we will analyse different positions, functions and the narrative of the me-

dia representation of myocardial infarction in the feature film "Balkan Spy" using the method of content analysis. The aim of the paper is to examine, analyse and describe the way in which the observed feature film constructs and produces media narratives about myocardial infarction, as well as what discourse strategies media workers resort to when contextualising myocardial infarction and people suffering from this disease.

THEORETICAL FRAMEWORK

The Association of Cardiologists of Serbia defines myocardial infarction as the "death of myocardial cells due to prolonged ischemia" (Nagulić, 1991, p. 162). In other words, acute myocardial infarction implies damage and death of heart muscle cells (myocardium) due to circulatory disorders, the so-called ischemic necrosis of the myocardium (Nagulić, 1991, pp. 162-163). The most frequently mentioned symptoms of an acute myocardial infarction are: chest pain, a feeling of tightness behind the sternum, gradually intensifying and spreading towards the left arm, lower jaw and stomach. In addition, symptoms of suffocation, loss of consciousness, dizziness, blurred vision, nausea and vomiting, malaise and sweating are reported (Zipes, 2018, p. 63). The medical literature points out that, for a positive outcome of this disease, it is crucial to start the prescribed treatment of the patient within the first, 'golden' hour after the first symptoms appear (Zipes, 2018, p. 63). Cardiologists most often cite smoking, improper diet, obesity, insufficient physical activity, hereditary factor, gender, age and the psychogenic factor, which often remains unspecified, as the main risk factors. These risk factors affect not only the onset of myocardial infarction and its development, but also recovery and the eventual occurrence of relapse (Nagulić, 1991, pp. 88-89).

A closer description of important psychological factors for the occurrence and prevention of myocardial infarction was provided by various psychological studies. The topic of these researches were individual personality traits/characteristics, but also their basic structures and environmental influences, which can affect the onset, course of treatment and prevention of the aforementioned disease (Angerer, Siebert, Kothny, Mühlbauer, Mudra & Von Schacky, 2000). The choice of topic, and therefore the results of psychological research, depended, and still depend, primarily on the theoretical framework from which the researcher approaches the problem he is examining (Đurić-Jočić, Džamonja-Ignjatović & Knežević, 2004). The theoretical frameworks of psychology that have made the greatest contribution to the understanding of myocardial infarction are psychodynamic, behavioural and holistic. We can see the overlap of the mentioned theoretical frameworks in the individual personality characteristics that all three mentioned theoretical frameworks highlight as significant for myocardial infarction. The individual charac-

teristics of the personality they state are: anxiety, depression, hostile reactions, aggression and individual reaction to stress (Engebretson, Matthews & Scheier, 1989).

Cardiovascular diseases and myocardial infarction are present in the field of feature films through media representations. The concept of representation in cultural studies is different from the concept of presentation or reflection. More precisely, this term implies that the existing texts are not only images of their sources, but are reshaped and encoded by the theoretical, textual, cultural and subjective reflections of the individual who observes and interprets them (Mek Kvin, 2000). Each representation implies a certain degree of construction, selection and shaping of meaning (Hall, 1997, pp. 13-15), that is:

...the meaning of an event does not exist outside of representation. An event gains meaning through the way it is represented. Thus, the meaning of the event cannot actually exist before the process of representation. Reality does not exist as definitive before and independently of the human activity of marking.

(Simeunović-Bajić, 2009, p. 921)

Media mediation of myocardial infarction implies the existence of an active and selective representation of certain content - symptoms, risk factors, and/or methods of treatment and prevention of this disease, all with the aim of producing meaning. Representations incorporate the understanding of the world by the individual or group that creates them, but also the understanding of social relations within it. Confirmation of the above can be found in the opinion of Moscovici [Serge Moscovici], who says that "By classifying what could not be classified until then and by naming what is unnamed, we are able to imagine it, that is, to represent it" (Moscovici, 1984, p. 30).

However, starting from media theory, we must keep in mind that the media do not present reality as it essentially is, but represent it, that is, reflect it, and therefore representation can be defined as:

An image, that is, a resemblance to someone or something or a reproduction of someone/something that exists in the real world. It can be an object, a person, a group or an event that is presented or is somehow shown indirectly.

(Mek Kvin, 2000, p. 179)

It is from this perspective that we will look at the media representations of myocardial infarction, as an event that exists in the real world, and which was reproduced in the media for the purposes of a feature television series. On the other hand, representations of visual media are closest to the personal experience of a certain situation in relation to some other ways of media representation of content.

ANALYSIS OF THE FILM "BALKAN SPY"

The feature film "Balkan Spy" is a cult achievement of domestic cinematography, which ends with a myocardial infarction. That is, it represents part of the domestic cultural heritage, which, as its central theme, features a universal representation of authoritarian regimes, independent of the current political system, along with a representation of their effect on the life and health of an individual, which can even lead to myocardial infarction.

The film "Balkan Spy" belongs to the drama genre, which represents life in the ideological torture of communism, with a hint of humour. A critical attitude towards social reality forms the backbone of the conceptual process. Strong contrasts and stage exaggeration form the basic dramaturgical thread, while comic situations and witty lines paint a gloomy picture of reality. However, the film still maintains its seriousness in depicting local flaws and divisions. It is in dramas like this that we see the full range of incorporating genre boundaries, when the drama constantly levitates between the comic and the tragic. Her heroes are tragic people on the border of worlds, where suffering is often not a personal fault, but a combination of inexplicable and unavoidable circumstances. That world is more poignant in that, because some of the viewers' personal and repressed experiences are mixed with a multitude of symbolic meanings.

The place where the play takes place is the house of the Čvorović family, and the entire narrative is carried by five characters, led by Ilija Čvorović, who represents the main protagonist of this feature film. The character of Ilija Čvorović is presented as the 'boss' of the house in a patriarchal family, dominant in relation to everyone around him and with the idea of 'a free man in a free country' as stated in one of the presented dialogues. Already, the first idea of Ilija's character as a 'free man in a free country' is in direct contrast to the very title of the film "Balkan Spy" which implies deprivation of freedom through espionage and the need for constant vigilance, i.e., which is in contrast to a free country. In this way, the character of the main character from the very beginning indicates the main theme of the film in terms of socio-political repression, but also the contradiction on which the character of the main protagonist is built. On the other hand, the etymology of the main character's last name contains the noun node. It is this noun that can indicate to us that it is a character that represents the hub of the plot, which is inextricable. However, if we return to the previously mentioned media representations of the heart, we will see that the same noun was used by Plato and Aristotle to describe the heart as a 'node of vessels' and already at this point we can make the first prototype of the central theme of this work, with the main character of the analysed film. It could be reflected in the metonymic association of the surname Čvorović, that is, the noun node that the said surname con-

tains in its base, with philosophical media representations of the heart, indicating, already at the beginning, the potential possibility of a negative outcome on this organ, more precisely the event of a myocardial infarction.

The immediate environment of the main character consists of his wife Danica, daughter Sonja and twin brother Đura. Their identities are presented exclusively through the marriage relationship, that is, family kinship with the main character - Ilija, whose presentation takes place exclusively in the shadow of the main protagonist. Opposite them is the figure of a tenant - Petar Marko Jakovljević. The character of the lodger is in conflict with the immediate environment of the main protagonist, primarily because he is not subordinate to him in any way, but is represented by his very position as a lodger, and an intruder in Ilia's perception of reality.

At the very beginning of the film, when introducing the lodger, the viewer can see the first mention of Ilija's heart problems, which from the start are shown as a consequence of the social order in which the analysed family lives:

Danica: *It's nothing, so do you know that the two of us have been waiting for an apartment for over twenty years. For twenty years, we were supposed to move in 'in the spring.' We lived, waiting for that spring, literally in sheds and basements. His one salary, his daughter a student, then a student...*

Ilija: *Danica, we have solved our problem, give that coffee to the man, the man is in a hurry.*

Danica: *How did we solve it? We solved it by the fact that you became a heart patient and I got rheumatism, that we are deep in debt for this house.*

(Kovačević, 1996, p. 26)

Within the aforementioned dialogue, the heart problem that Ilija has is not specified, nor is any visit to the doctor due to it shown later in the film, but it is precisely through him that the discomfort of life in the communist social system is pointed out and its impact on peoples wellbeing. The further course of the dialogue complements this picture of the social order, due to the allegations about the impossibility for young and educated people to find a job, but also Ilia's need to stop this direction of communication, due to the possible denouncing label of an enemy of the state, and due to the public presentation of such facts, especially to a foreigner, a tenant - a state enemy.

Ilija's confusion and fear were initiated by an invitation to an informative interview by the state security inspector, which in a character who was previously persecuted and abused, leads to the flare-up of psychotic-paranoid episodes. Ilija's character is built in such a way that it is completely irrelevant to his character that the subject of upcoming conversations and interest of state authorities is not him, but his tenant. Emotions of fear and tension are the dominant emotions of Ilia's character that

drive him to action. If we connect these emotions with personality characteristics that the psychology discourse associates with myocardial infarction, we arrive at the anxiety mentioned by psychodynamic theorists, as well as theorists who belong to a holistic approach (Shapiro, 2000). Therefore, in the discourse of psychology, anxiety represents the anticipation of a danger that does not exist in reality (Zdravković, 2003, p. 162-163). That is, anxiety arises when an individual assesses that a certain situation in which he finds himself exceeds his capacities. More precisely, anxiety arises when an individual assesses that he cannot cope with the life circumstances that seem threatening even though there is no real threat. If we add a physiological component to the emotion of anxiety, we arrive at cardiological disorders described in medical discourse. Namely, a state of intense fear or apprehension (anxiety), on the physiological level, causes the secretion of adrenaline, which, due to its presence in the blood, raises blood pressure, narrows the arteries and, with a longer-term effect, can lead to cardiac arrhythmias or even myocardial infarction, even in people without structural heart disease or disturbances (Molinari, Compare & Parati, 2006, pp. 172-175). One of the components of anxiety that psychologists associate with the increased incidence of ischemic heart diseases is anxiety, which we can also observe in the main character of this film. Viewed from the point of view of physiology, that is, medicine, chronic anxiety is associated with reduced heart rate variability. The results of a study that examined the interrelationship of the mentioned variables indicate that a high level of anxiety increases the risk of developing coronary disease in older men. In this context, we can say that, from the very beginning, psychological elements that unobtrusively indicate the occurrence of a future myocardial infarction are woven into the character of Ilija Čvorović.

As a result of the mentioned emotions, Ilija's character on the behavioural level becomes breathless, fast and sharp in its movements. This is reflected both in his gait and in the way he shakes his cigarette. Such behaviours are partly described by behavioural psychological theories as risk behaviours for the onset of myocardial infarction (Kubzansky, Kawachi, Spiro, Weiss, Vokonas & Sparrow, 1997). However, the aforementioned theories are not only concerned with the description of individual behaviours, but also with possible ways to overcome unfavourable emotions and behaviours that may have negative consequences for an individual's health. The psychology discourse calls these mechanisms 'overcoming mechanisms' or 'coping' mechanisms. Certain studies have shown that people who use 'optimistic' mechanisms to overcome negative and unfavourable emotions had lower anxiety scores on psychological assessment scales, but at the same time a better prognostic index of recovery on cardiology assessment scales (Chiou, Potempa & Buschmann, 1997, p. 305-311). In the analysed feature film, Ilija's character

unfortunately does not use such constructive mechanisms of overcoming, but builds on the previously mentioned emotions, producing the emotion of anger. Ilija is angry at the woman who persuaded them to rent out the room, he is angry at himself because of the situation he found himself in, he is angry at his daughter who, as an educated member of society, does not support him in his paranoid efforts, and he is angry at the lodger in whom he sees the source of all his problems. Ilija's character's reactions become hostile. The medical discourse associates hostility on the physiological level with an increase in the level of catecholamines and fats in the blood, but also with a decrease in the heart rate of the individual. On the other hand, antagonistic hostility is manifested on the behavioural level by non-cooperation, cynicism, impoliteness and direct aggression (Carney, Saunders, Freedland, Stein, Rich & Jaffe, 1995). Analysing Ilija's character, we can conclude that his behaviour, viewed through the aforementioned division, is antagonistically hostile. Psychological research indicates that coronary diseases occur more often in antagonistically hostile than in neurotically hostile persons. Scientific support for the aforementioned conclusion about the connection between anger and myocardial infarction can be found in a study conducted on a sample of 1,623 people, who were examined 4 days after experiencing a myocardial infarction (Angerer et al., 2000). The interview determined the time, place and quality of pain as a somatic manifestation of a myocardial infarction, but also assessed the usual frequency of anger, both during the past year and within 26 hours before the onset of the infarction. The conclusion of this research is that an episode of anger is highly correlated with the occurrence of an acute myocardial infarction. His results indicate that more than 2% of all diagnosed myocardial infarctions, on an annual basis, are accompanied by an episode of anger and the experience of anger (Verrier, 1997, pp. 245-259).

The entire context surrounding the character of Ilija Čvorović represents highly stressful situations. The word 'stress' appeared for the first time in the index of "Psychological Abstracts" in 1944 (Robinson, 2018, pp. 334-342). This term represents an intensely unpleasant feeling that in the long term can have negative consequences on psychophysical abilities, health, and the productivity of a person in general. The reaction to stress is individual, and it is the result of the interaction between the individual and the environment, that is, the inability of an individual to respond to the demands of the environment whose expectations exceeds the persons' abilities.

When the body is under the influence of stress, viewed from the point of medical discourse, the hormones adrenaline and noradrenaline are secreted on the physiological level. These hormones act on the cardiovascular system by accelerating the heart and increasing muscle tone. However, their effect is not limited only to this organ system, but also af-

fects the increase of sugar and fat levels in the blood. Physical changes occur as a result of physiological processes, and psychological ones include the appearance of insomnia, anxiety, agitation, depression, low tolerance for frustration, lowered self-confidence, weakening of concentration, general dissatisfaction, emotional exhaustion, emotional hypersensitivity and giving up. The behavioural components are: an increase in the consumption of alcohol, cigarettes or psychoactive substances, which aim to reduce the intensity of psychological changes (Robinson, 2018). We can see a large number of the aforementioned physical changes in the character of Ilija Čvorović, such as insomnia, anxiety, general dissatisfaction, emotional hypersensitivity, but also behavioural components such as alcohol and cigarette consumption. Psychological discourse distinguishes between acute and chronic stress (Milivojevic, 2008). Acute stress is primarily characterised by the experience of emotional suffering. People experiencing acute stress maintain self-awareness by expressing concern for their psychological state. They are aware of their anxiety, sadness, depression, anger towards themselves and/or others, excessive use of alcohol, cigarettes or coffee, poor concentration and rumination. The above most often leads to a decline in the quality of life, which can additionally intensify stress conditions through the principle of a feedback loop. If an individual does not overcome the state of acute stress in a short period of time, we are talking about chronic stress. Chronic stress, like the kind of stress to which Ilija Čvorović's character is exposed, leads to the development of tolerance to the presence of stressors, i.e. the individual gets used to the presence of problems. Emotional distance becomes more and more pronounced, social contacts become fewer, and the suppression of rarity becomes stronger. The last one is the most noticeable in Ilija's character, although the presentation of the other two mentioned behavioural components of chronic stress is not neglected either. Chronic fatigue occurs due to constant tension, as do a general drop in motivation, increased irritability, impulsive reactions and insomnia. The aforementioned condition, on the somatic level, can lead to the appearance of symptoms such as weakness, fainting, and even pseudo epileptic attacks. Psychological research in this field states that chronic stress stands out as an independent factor that has a high predictive value when it comes to heart diseases (Hammen, Kim, Eberhart & Brennan, 2009, p. 718-723).

As we mentioned, Ilija's character does not use 'optimistic' mechanisms to overcome all the emotions mentioned so far, but finds a way out in branding the other - the tenant, as the culprit. The character of the lodger is blamed for everything that happens in Ilija's head. In other words, Ilija is positioned in such a way that he suspects, so as not to be suspected himself, blames so as not to be blamed himself, and in concern for his own existence, endangers that of others. Such a paradoxical mechanism is the basis of the psychotic reaction.

The actions of Ilija's character led to the collection of a large amount of unnecessary information which, interpreted through the prism of a psychotic individual, transforms an innocent man into a guilty one. The character of Ilija's brother, Đura, can be viewed through the discourse of psychology as Ilija's alter-ego that supports the paranoid ideas of Ilija's character, which further highlights this psychological deviation. The peak of ideological paranoia about magical state traitors, who should be 'cancelled' at any cost, is found in the scene in which Ilija and his brother interrogate a bound tenant. The culmination of emotions and ideological fanaticism leads to the psychological and physical collapse of Ilija Čvorović's character, who experiences a myocardial infarction. The representation of a myocardial infarction is shown in only one scene, with the representation of a reduced number of symptoms - a sharp pain in the chest, the occurrence of which we conclude based on the reaction of Ilija's character; he clutches his chest with his hands, has difficulty breathing, which is shown through difficult and quiet speech and difficulty moving that is reflected in slow and heavy leg movements. However, even then, Ilija's character is not designed to think of himself. He is not occupied with asking for help, but with further investigation and bringing the 'terrorist' to justice. All previously represented symptoms of myocardial infarction knock Ilija to the floor, but he still crawls, tries to catch up with his enemy with the last atoms of strength, ending up sprawled on the floor in front of the open door without psychological relief, a frame that points to the fatal outcome of myocardial infarction. On the basis of the above, it can be said that the character of Ilija Čvorović was created by the framing technique in such a way that he actively participates in his myocardial infarction, which is most directly evidenced by the very last scene in which he experiences the symptoms of a myocardial infarction and continues to crawl, enduring the unbearable and avoiding a call for help, as an act of self-sacrifice.

The analysis of Ilija Čvorović's character in the movie "Balkan Spy" gives us an insight into certain personality characteristics that the psychology discourse associates with myocardial infarction. In addition to the mentioned emotions of fear, apprehension, anxiety and anger, there is also paranoid behaviour for which there is no psychological evidence of a connection with myocardial infarction, but which the psychology discourse can explain through the presence of chronic stress. On the other hand, the symptoms that the medical discourse highlights when talking about a myocardial infarction are represented by only three symptoms: chest pain, shortness of breath and reduced mobility of the extremities. If we look at the physical characteristics of the character of Ilija Čvorović, we see that he is presented as an obese, elderly person who suffers from diabetes, often sleeps very little and insufficiently, smokes and occasionally consumes alcohol. The medical discourse lists all of the above elements as risk factors for myocardial infarction.

The scenography also contributes additionally to the atmosphere and highlights those elements that are the main theme of the film. In this context, we can observe the red-light bulb that appears in the house of Čvorović, which on the one hand can refer metonymically to communism as a social order in which the action of the drama takes place, but also point to the impending myocardial infarction, as the culmination of the social repression of the individual. The presented weather conditions also have a contextual role that can be interpreted as an introduction to myocardial infarction. The displayed weather is cool, there is a significant difference between the temperature in the interior and the exterior, and these amplitudes can represent both the amplitudes of feelings and the amplitudes in blood pressure variation that eventually led to myocardial infarction. The function of the representation of myocardial infarction in the analysed film is primarily to show the devastating impact of the depicted social arrangement - both on the psychological and physical existence of individuals within it. That is, the representation of a myocardial infarction serves the purpose of representing the peak of the devastating consequences of the repressive regime.

CONCLUSION

Although it is a natural human tendency to interpret media representations as realistic, realism in the conditions of film communication is an artificial construction. Its reality represents a marketed and selected image of the world that is experienced, among other things, through the structure of language. Therefore, the 'meaning' that the recipient of the message derives from it, in the previously mentioned sense, is a construct of matching external stimuli with internal concepts. This congruence is influenced by the local culture as local internal concepts develop or thought patterns form as a result of local cultural experience. Although the roles of individual representations may be changed and/or enriched by new discourses and the cultural experience of the communities, they still represent an authentic matrix of the local population that is very close to the audience. The role of myocardial infarction in this analysed film is secondary in relation to the overall theme of the film. His representation represents the resolution - the culmination of the narrative about the political repression of society. By representing different conflict situations and actions that gradually contextualise the problem, one can anticipate later representations of myocardial infarction, or the dramatic outcome. The psychological characterisation of the central character is the basis for the representation of myocardial infarction. His internal turmoil arises within the framework of everyday activities that are not problematic in themselves, but the problem arises because everyday life is presented as a field in which the foundations of the constitutive values of a society, its socio-

cultural organisation, are being shifted, thus calling into question the enforceability of the routine of life. It was in such a context that the representation of a myocardial infarction was used as a representation of the culmination of social repression on an individual.

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РЕПРЕЗЕНТАЦИЈА ИНФАРКТА МИОКАРДА У ФИЛМУ „БАЛКАНСКИ ШПИЈУН“ У ФУНКЦИЈИ ПРИКАЗА КУЛМИНАЦИЈЕ НАРАТИВА ДРУШТВЕНЕ РЕПРЕСИЈЕ

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Резиме

У оквиру овог рада анализирали смо различите позиције, функције и наратив медијске репрезентације инфаркта миокарда, у играном филму „Балкански шпијун“ методом анализе садржаја. Циљ рада био је да се испита, анализира и опише начин на који посматрани играни филм конструише и производи медијске наративе о инфаркту миокарда, као и каквим дискурским стратегијама медијски радници прибегавају када контекстуализују инфаркт миокарда и особе које болују од ове болести. Медијско посредовање инфаркта миокарда подразумева постојање активног и селективног представљања одређених садржаја – симптома, фактора ризика, и/или метода лечења и превенције ове болести, а све у циљу стварања смисла. Представе обухватају разумевање света од стране појединца или групе која их ствара, али и разумевање друштвених односа унутар њега. Играни филм „Балкански шпијун“ је култно остварење домаће кинематографије, које се завршава инфарктом миокарда. Читава контекст који окружује главног јунака овог филма представља веома стресне, емотивне и застрашујуће ситуације. Анализа лика Илије Чворовића даје нам увид у одређене карактеристике личности које систем психологије доводи у везу са инфарктом миокарда. С друге стране, симптоми које медицински систем истиче када се говори о инфаркту миокарда представљени су са само неколико симптома. У сценографији су истакнути и они елементи који су главна тема филма. У том контексту можемо посматрати црвену сијалицу која се појављује у кући Чворовића, која с једне стране може метонимијски упућивати на комунизам као друштвени поредак у којем се одвија радња драме, али и указати на предстојећи инфаркт миокарда, као врхунац друштвене репресије на појединца. Улога инфаркта миокарда у овом анализираном филму је споредна у односу на укупну тему филма. Њено представљање представља резолуцију – кулминацију наратива о политичкој репресији друштва. Представљањем различитих конфликтних ситуација и радњи које постепено контекстуализују проблем могу се предвидјети каснији прикази инфаркта миокарда, односно драматичан исход. Дакле, функција репрезентације инфаркта миокарда у анализираном филму је првенствено да прикаже разорни утицај приказаног друштвеног уређења – како на психичку тако и на физичку egzистенцију појединаца у њему.

ECHOES OF MODERNITY: ART TENDENCIES DURING THE INTERWAR PERIOD AND THEIR INFLUENCE ON PEDAGOGICAL APPROACHES IN ART SCHOOLS

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Abstract

While modernist schools in the field of art and design developed in parallel worldwide between the two World Wars, in Serbia, political and social circumstances diverted attention to different needs. Artists were mostly educated abroad, in cities like Paris, Munich, Prague, or Budapest, often in order to return to the Kingdom of Yugoslavia with the acquired experience and knowledge, bringing ideas changed through a personal prism. Avant-garde artistic ideas and styles appeared on the territory of today's Serbia between the two World Wars, but were altered under the influence of the prevailing and generally accepted traditionalism, which ruled art educational institutions as much as the society at large. The sociological and intellectual characteristics of society largely determine the dominant form of aesthetic consciousness, and the acceptance or non-acceptance of certain art forms greatly influenced the stylistic picture of the epoch. During that time, the evolution of art education was dynamic, but the same cannot be said of the development of learning programs. By tracing the historical trajectory of the creation of schools for artists, we aim to illuminate the relationship between artistic progress and society, and the underlying pedagogical theories, methodology and challenges that have influenced the education of generations of artists.

Key words: art, traditionalism, avant-garde, progressive schools, Yugoslavia.

ОДЈЕЦИ МОДЕРНЕ: ТЕНДЕНЦИЈЕ У УМЕТНОСТИ ИЗМЕЂУ ДВА СВЕТСКА РАТА И УТИЦАЈ НА ПЕДАГОШКЕ ПРИСТУПЕ У ШКОЛАМА ЗА УМЕТНОСТ

Апстракт

Док су се у свету између два светска рата паралелно развијале модернистичке школе у области уметности и дизајна, на просторима Србије су политичко друштвене околности преусмериле пажњу ка другачијим потребама. Уметни-

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ци су се махом школовали у иностранству, у градовима попут Париза, Минхена, Прага или Будимпеште, да би се са стеченим искуством и знањем неретко враћали у Краљевину Југославију доносећи кроз личну призму измењене идеје. На просторима данашње Србије између два светска рата појавиле су се авангардне уметничке идеје и стилови из света, измењени под утицајем владајућег и опште-прихваћеног традиционализма, који је владао уметничким образовним институцијама исто колико је владао друштвом. Социолошке и интелектуалне карактеристике друштва умногоме одређују и владајући облик естетске свести, а прихватање и неприхватање одређених уметничких форми је умногоме утицало на стилску слику епохе. У то време, еволуција уметничког образовања била је динамична, али не толико у развоју програма обучавања. Пратећи историјску путању настанка школа за уметнике, циљ нам је да осветлимо однос између уметничког напретка и друштва, основних педагошких теорија, методологије и изазова који су утицали на образовање генерација уметника.

Кључне речи: уметност, традиционализам, авангарда, прогресивне школе, Југославија.

INTRODUCTION

After the First World War, all the countries involved shared a common need for renewal and the improvement of social, economic and political conditions. For the region of Serbia, with its then recent history of only short periods of respite from destruction taken into consideration, this problem was even greater. After the two Balkan wars which brought liberation from the Ottoman Empires' centuries long occupation, the Balkans became a hotspot of a new war, and a much more widespread conflict. While the modernisation process began in the world, covering all social spheres, the Kingdom of Serbs, Croats and Slovenes, later the Kingdom of Yugoslavia, invested its energy in building the state apparatus and strengthening the unity of the Balkan people. The way in which each country treated the stumble of humanity and its consequences largely depended on the cultural and social perspective and the ruling political ideology, both before and after the war. All of these factors together affected the forming of the educational system, and thus the position of art in it. Every current event also reflects on the artist as a social and emotional being, who will then teach future generation. These interconnected and intertwined threads cannot be observed as isolated factors: we cannot separate the artist from the school in which he studied and whose experiences he carries on, from the epoch in which he creates that includes political, economic and social circumstances, from the society to which he belongs and, thus, from their reaction to a reality in which a certain style or 'ism' has taken shape; and neither can society be separated from the past which has certainly left traces on its current form.

In the beginning of the twentieth century, industrial development brought a need to adapt to technological progress and its speed, which also affected art tendencies. Change was followed by the emergence of ear-

ly British Modernism and early German Expressionism, then French Fauvism, Purism and Orphism, the Cubism of Picasso and Braque, Italian Futurism, Russian Regionalism, Constructivism and Supremacism, English Vorticism, as well as the global movement of Dadaism. Not all artists were influenced by these novelties. There were still figurative realists in America and Europe, as well as in Mexico, who created their own national art, and that proved that the time had come when one could choose one's own path. However, a much louder trace in the history of art was made by the movements that surprised the public, and which did not rely on the traditional realistic approach. In European cities, the rapid shifts of 'isms' continued between the two World Wars. Many art schools established during that time would later leave a strong influence on art education, especially on schools for design, by providing a drastically different example compared to the previous prevailing academicism.

At the same time, in Southeast Europe, the pre-war idea of Yugoslav cultural unity had not weakened yet, but interethnic conflicts emerged within the newly formed country of the united Slavic people, due to different understandings of what Yugoslavia is and what its art should be (Makuljević, 2017, p. 419). Makuljević (2017) points out that the complex cultural situation influenced the establishment of various artistic practices that acted in the service of emphasising and building the state and national identity, but were also affected by monarchist propaganda. It is exactly this struggle for the preservation of diverse national identities and the fear of possible weakening that may be the key answer to why art educational institutions remained committed to traditionalism, and why they resisted bigger stylistic changes or complete modernisation, and upheld avant-garde ideas from various parts of Europe.

As a discipline, art education serves as a conduit for nurturing creativity, honing artistic skills, and fostering a deep understanding of cultural expression. Within the context of our territory, a nation steeped in rich artistic traditions and cultural heritage, the evolution of art education has been dynamic, but the same cannot be said of the development of learning programs. By tracing the historical trajectory of the creation of schools for artists, we aim to illuminate not just the artistic progress but also the underlying pedagogical theories, methodologies, and challenges that have influenced the education of generations of artists. Understanding the interplay between societal needs, artistic movements, and pedagogical innovations of the past is pivotal in appreciating the holistic development of art education in Serbia as it is today.

*THE SPREADING OF MODERNISTIC IDEAS
WITHIN INSTITUTIONS IN THE WORLD*

Walter Gropius' stand that architects, painters and sculptors must be artisans at the outset, that the best way to learn is through practical work, and that aesthetics can be developed only on the basis of solid craft experience was revolutionary in that time of prevailing academicism (Arnason, 1975, p. 250). Based on this view of art education, Gropius created Das Staatliche Bauhaus, a school that does not recognise art as a profession, as "there are no significant differences between an artist and a craftsman," and the artist is a "sublime craftsman" (The First Manifest of Bauhaus, according to: Arnason, 1975, p. 251). In accordance with the school's aspiration to connect the principles of mass production with an individual sense of aesthetics, students acquired craft skills by designing custom models for industry, through the courses of fine arts, architecture, interior design, graphic and industrial design, and typography. As stated by Gropius (1974), the intention of the Bauhaus was to eliminate the shortcomings of the machine, but not to sacrifice any of its advantages, which was in line with the time when machine-made products filled the market and when the 'absence of good form' invites artists and craftsmen to combine their knowledge.

Arnason (1975) considers the Bauhaus one of the most important art schools in history, not only because of the artists who taught and studied there but also because of the influence that the Bauhaus had all over the world. After six months of a Preliminary Course (Vorlehre or Vorkurs), during which the basics of techniques and materials were taught, students would choose a course to join, such as ceramics or wood sculpture, weaving, carpentry, metal workshop, printing and more. Each course had a lecturer artist and lecturer craftsman. After three years of training in crafts and design, the student would obtain their 'Master's letter' by taking the exam, and if they wanted to continue their education, he/she could start attending classes in architecture and construction, which was the highest vocation (Gropius, 1974). While lecturers at other academies taught students their own principles and passed on practical experiences, the Bauhaus paid attention to the laws of interaction of form and colour, while personal spiritual values served the designing process (Grote, 1974). Painting, graphics and scenography were taught by Kandinsky (Василий Васильевич Кандинский), Paul Klee, Lyonel Charles Feininger, Georg Muche, Oscar Schlemmer, and László Moholy-Nagy, and pottery was taught by Gerhard Marcks. With the transfer from Weimar to Dessau, several students also became teachers, like architects and designers Marcel Brauer and Herbert Bayer, and painter and designer Joseph Albers. At the heart of the overall training was a Preliminary Course, developed by the Swiss painter Johannes Itten, which intended to expand students' experiences through creative practical work and exper-

imentation, as well as through the study of non-Western philosophies and mystical religions (Arnason, 1975, p. 250). The Preliminary Course served to awaken an individual gift in students and to prepare them for the further education. Itten achieved that by combining his own method of artistic education with the neo-Buddhistic teaching of the rebirth of an originally pure human being (Grote, 1974). Klee and Kandinsky put in the foreground values such as composition, colour, line and shape, on the basis of which the aesthetic experience is built, and which are intertwined with Neoplatonic ideas, as well as with knowledge of mathematics and physics. (Arnason, 1975; Lerner, 2005). The orientation towards the principles of nature, less scientific in Klee than in Kandinsky, contributed to the formation of personal pedagogical principles, which Klee presented in his *Pedagogical Sketchbooks* (example: Klee, 1925). More realistic technological-formalistic ideas and functionalist principles of Moholy-Nagy and Albers, who inherited Itten's course, were expressed through rhythmic-asymmetrical compositions in space, while students would get acquainted with the boundaries of materials and the principles of shaping through experimental work and research (Grote, 1974; Stelzer, 1974; Lerner, 2005; Sarvanović, 2016). Albers resolved and altered the contradictory components of the Bauhaus, such as pedagogical activism, mystical expressionism, and excessive constructivism, by turning the didactic foundations of the school into systematic and applicable teaching material (Meštrović, 1969, p. 15). The Bauhaus was significantly influenced by Theo van Doesburg, who promoted the De Stijl ideas, by Le Corbusier's (Charles-Édouard Jeanneret) principles of architecture and the renewed essence of classical antiquity, as well as the Soviet artistic trends best conveyed by Moholy-Nagy and Kandinsky (Meštrović, 1969; Grote, 1974; Arnason, 1975).

When Gropius was replaced by the architect Hannes Meyer as the school principal, the curriculum was expanded in order to create well-educated architects by adding psychology, sociology, mathematics, economics, urban planning, political science and physical education (Arnason, 1975; Sarvanović, 2016). Putting applied design at the forefront, versus the artistic individual, functionality was found to be the basic goal of teaching.

The Bauhaus combined modernist ideas of cubist and constructivist simplification of forms with the functionality of the usable object, which was opposed to a society that wanted art that would support its ideals and spread political messages. The socialist-orientated policy of the school led to a collision with the more conservative Weimar, and to a move to first Dessau, and then Berlin, until the antagonism culminated and the Nazi authorities closed the Bauhaus. About 1,870 of its members transmitted ideas and knowledge around the world, in more than thirty countries, both by teaching future artists and through their own creative

work (Grote, 1974; Arnason, 1975; Sarvanović, 2016). Moholy-Nagy transferred the ideas of the Bauhaus to Chicago, where he became the head of the New Bauhaus in 1937 (now the Institute of Design of the Illinois Institute of Technology), and thus strongly influenced the development of design in the United States. Albers was a professor at Black Mountain College, Yale University, and taught courses at many institutes. He incorporated Bauhaus experiences into America's art, which was still out of the modernist influence, and made a lasting impact on art education (Grote, 1974). The method of the Preliminary Course has also been adopted by colleges and academies in Germany, England and Japan. Beyer laid the foundations of visual communications through his personal creative practice. During that time, Brauer joined Gropius as a professor at Harvard University, and experienced world fame after 1941. By promoting cubist principles and abstraction, he influenced the development and spread of the idea of experimentation in education, especially in schools of architecture, painting and sculpture (Arnason, 1975).

Similar teaching principles were adopted by the Soviet school of Vkhutemas (Вхутемас), which sought to create teaching methods compatible with new artistic trends by forming a pedagogical system around the experimentally created avant-garde analytical methods of examining the art form (Adaskina, 1992). The curriculum and methods of work in Vkhutemas were based on the theorised principles of the avant-garde and all its contradictions, from experimentally explored forms, over synthesising organic and mechanic, to finding collective and objective knowledge in individual creations (Adaskina, 1992).

As a spiritual extension of the Bauhaus, the Ulm School of Design (Hochschule für Gestaltung in Ulm) moved towards the idea of the necessity of craft knowledge and skills in the 'most avant-garde' way, by approaching design from a scientific basis, while recognising the need to strengthen historical-critical awareness which embodies both an ideological and political dimension (Meštrović, 1969, p. 5). By gathering the most progressive experts and pedagogues from all over the world, the school intended to lead the post-war world of poverty along industrial paths, and, like the Bauhaus, to combine fine and applied arts. The pursuit to reach the future evoked the aggressive suspicion of all those who were attacking the Bauhaus between the two wars, and who did not accept anything that transcended the narrow horizons of the national tradition (Meštrović, 1969, p. 6).

Paris regained its place as the world capital of art between the two wars, but no significant progress occurred within the institutions. With the gathering of a large number of artists from all over the world, Paris became a place of stylistic and creative abundance. In the 1920s and 1930s, surrealism began to spread from France, through Spain, Russia and America, and reached Yugoslavia. Surrealism experienced a wider response through its

altered forms: Naturalism, Neoplasticism and Magical Realism. In parallel to the Surrealists, the group Abstraction-Création was founded, along with a magazine of the same name, which promoted the ideas of Suprematism, Constructivism, De Stijl and other abstract movements, making the artistic society even more diverse (Arnason, 1975).

European artists were slowly incorporating their ideas into the ‘provincialism of American art,’ encountering strong resistance from traditional, social and regional Realism and Impressionism established in all art institutions. This makes the art scene of the USA similar to Yugoslavia at that time, although with different social and political foundations.

On the eve of the Second World War, in Germany, the pressure on artists increased when the Bauhaus was closed. ‘Non-Aryan’ art was marked as degenerative, Bolshevik and decadent, and was ridiculed and massively destroyed. In Italy, the Fascist government was more tolerant of Futurists, Abstract painters and Expressionists, but they singled out the politically desirable by giving awards and organising exhibitions (Borovac, 2006). At the same time, in Soviet Russia, the goal of creating art that was “revolutionary in its form and socialistic in its content” was glorifying the conservative Realism of the previous century and, as consequence, the number of scenes with satisfied workers and farmers and proud members of the Red Army increased (Borovac, 2006).

ARTISTIC TRENDS FACING THE WEST

The attitude that the conservative German society had towards Bauhaus was the same as the one that the French society had towards the first Impressionists in the previous century, and similar to the way Italy reacted to the Fauvists who triggered all subsequent ‘overturns’ on the art scene in 1905. The prudence towards something different, towards advanced and still ‘uncontrolled’ is at the core of society, which, formed on certain principles and guided by them, can pressure individuals to continually contribute within the already accepted framework. Such was the society of the Kingdom of Serbs, Croats and Slovenes, which from the very beginning had many problems that needed to be solved, like social issues, illiteracy, and the problem of consolidating its international status and defining borders (Petrović, 2008; Perović, 2017). These needs occupied all the attention of the authorities: the goals of education were redirected to illiteracy, which is why art education did not develop more advanced forms. Since 1937, and the government of Milan Stojadinović, the systems of supervision and control of culture, education and science were strengthened in fear of the disintegration of folk traditional values (Petrović, 2008).

When it comes to Serbian art and artists, Protić (1970) notes that, unlike the 19th century when Serbian art leaned towards Vienna and Mu-

nich, artists turned mostly to Paris in the new century, and art slowly acquired a more general character, but it was only in the 1950s that it gradually separated from the ‘illusion of administrative socialism.’ Due to the fact that the impressionism of the previous century “remained in modest, Serbian, Belgrade and, in a way, patriarchal proportions” (Protić, 1970, p. 76), the society of later years did not have the same basis for the full modernist upheaval that the rest of the world experienced. Our painters were educated in European cities, and then returned home with progressive ideas and a desire to contribute to national art, but they often encountered resistance from the collective which upheld traditional values. Copying classical works from renowned world museums contributes to the development of skills, while encounters with the works of famous contemporary artists at current exhibitions will guide our artists towards modern artistic concepts (Trifunović, 2005). Or, during their stay in Europe, they were “too fascinated by the tangible evidence of the longingly desired European past to notice that *spectacular city*,” which was an escape into “idealized landscapes of the past” (Čupić, 2017, pp. 61-62). There were efforts in society against the avant-garde and stylistic diversity of modern society, whose individuality would be a danger to traditional values, like Futurists who were marked as ‘fantastic and pathological dilettantes’ from the very beginning (Protić, 1970, according to the article: „Футуризму“ у сликарству – ‘Futurists’ in painting, by Miloslav Stojadinović). Therefore, Protić (1970, p. 79) emphasises that at the beginning of the century, artistic activity was valued more than the work itself, especially if that art could be a ‘subtle instrument of politics.’ In addition, if we look at the aspirations of the interwar society, it is noticeable that the need to get closer to the more advanced West and be accepted in the world has led to the glorification of the value of everything imported. Thus, studying abroad also meant a general advantage. Europe was a synonym for progress and well-being, a certain ideal to strive for, and Serbian art was in some way compared, interpreted and determined in relation to European art (Čupić, 2017, p. 13). Nevertheless, the beginning of the twentieth century was already marked by “an emphatic insistence on a dual identity” (Čupić, 2017, p. 22) at the World Exhibition in Paris in 1900, but also at later exhibitions of the international type in European capitals, where art was used as a witness of national identity and historical continuity. The Serbian pavilion was filled with characteristic elements and symbols of the Serbian tradition, from paintings and sculptures with a historical narrative, to applied art, objects from everyday life and products. The conservatism of Yugoslav critics and audiences is also evident in the negative reactions to the Fifth Yugoslav Exhibition, which showed the development of domestic art from the beginning of the century to the beginning of the third decade of the 20th century, wherein the negative comments were aimed especially at young artists, and cubist and

futuristic tendencies (Trajkov, 2021). This contradiction between the intention to underline the Serbian-European tradition with the selected compositions presented at the World Exhibition in Paris (where paintings such as *The Coronation of Emperor Dušan* by Paja Jovanović, *The Fall of Stalać* by Đorđe Krstić and others were exhibited), to somehow leave out the heritage from the time of Ottoman rule, the aspiration to complete the image of a unique identity and the simultaneous reserve towards more radical creative expressions was the basic feature of the entire art scene in the following decades.

After the First World War, there was a desire for art to be freer from academism, but the process of Europeanisation in art was slow, as in all spheres of society. While Purism, Constructivism and Neoplasticism were already developing in the world, and Dadaism was still attempting to destroy art, the first Cézanneists appeared (for example, only in 1929 was opened the Art Pavilion of Cvijeta Zuzorić with the Autumn Exhibition of Belgrade Painters) in the Yugoslav countries, where there were no permanent galleries and thus no audience. Yugoslav painters mostly followed the legacy of Nadežda Petrović, who opened the world of Impressionism for the Serbian audience, which is why the first avant-garde styles from abroad arrived years later, in the form of post-Cubism, Lhote's (André Lhote) softened cubism in Traditionalism and Neoclassicism, and Expressionism which Protić (1970, p. 87) explains as marked by Christian socialism. Dadaism found its followers belatedly, and entailed the formation of Zenitism, based on the name of the magazine *Zenit* of Ljubomir Micic, who did not want the "Europeanization of the Balkans, but the Balkanization of Europe," which thus spread ideas contrary to the Modernism (Protić, 1970, p. 96). Preoccupied with the desire to create national art, Yugoslavia constantly returned to the study of Slavic and Serbian folk traditions, as did the art group *Zograf* (1927-1940), with sharp protests against 'foreign art that arose in completely different historical circumstances.' Therefore, Protić (1970, p. 103) argues that the Serbian Yugoslav art scene could be divided only into echoes of Cézanneism, Cubism, Futurism, Expressionism and Traditionalism, but without a clear typology, and that the entire third decade was in 'search for form and structure.' There was a certain heterogeneity in all spheres of society in the first half of the twentieth century, united under the name of the Kingdom of Serbs, Croats and Slovenes, and then the Kingdom of Yugoslavia, such as differences in language, traditions, customs, mentality, and commitment to culture and its development, which in a way prevented the unity of culture and the creation of a general image of art (Čupić, 2017, p. 18).

After the worldwide economic crisis of 1929, there was a wider echo of coloristic Expressionism among local artists, most of whom studied at Central European academies: Petar Dobrović, Zora Petrović and

Ivan Tabaković in the Budapest academy influenced by Munich, Jovan Bijelić in Kraków and Prague, and Milan Konjović in Prague and Vienna. During the first years of the 1930s, Surrealism, which arrived in Yugoslavia through Marko Ristic from Paris, was also influential. The almanac *Немогуће - L'impossible* (Eng. Impossible) was published, followed by the magazine *Надреализам данас и овде* (Eng. Surrealism Today and Here) and numerous other publications (Protić, 1970). In the same period, Intimism and Poetic Realism were developed, which implied returning to the representation of the real and seen, as well as observing the inner state. What painters of these styles have in common is that after schooling in various cities outside Yugoslavia, they became professors within its borders. For example, the Intimist Ivan Radović was a professor at the Belgrade Art School, Jefta Perić was a professor at the Academy of Applied Arts in Belgrade, Kosta Hakman was a professor at the Academy of Fine Arts in Belgrade, and Jovan Bijelić, after teaching at a high school in Bihać, founded a private school in Belgrade, from which a whole series of painters emerged (Protić, 1970). With them, of course, a slightly freer and brighter Impressionistic colouring was brought to art education.

The first half of the 20th century was marked as a transformative era for art education in Serbia. Despite the challenges posed by political unrest, economic fluctuations, and shifting cultural paradigms, several notable art schools were established.

The centre of art education in the country was the Royal Art School in Belgrade (Kraljevska umetnička škola, 1919-1937), which clearly outlined the stylistic and organisational influence of the Munich and Paris schools of the previous century. Yugoslav artists Milan Milonović, Rista and Beta Vukanović, Ljuba Ivanović, Petar Dobrović, Nikola Bešević, Vasa Pomorišac and Ivan Radović, who taught at the Royal School, brought their own Coloristic and Impressionistic orientations. They tutored a large number of artists on the traditional grounds of landscape, still life, and drawing and painting by model (Jovičić, 2013). The methodological basis revolved around classical art training, and this approach aimed to provide students with a strong technical foundation, enabling them to master the fundamental skills of fine arts. The thematic narrowness in artistic work within the school was equally characteristic for the entire interwar period (Protić, 1973; Jovičić, 2013).

In 1937, at the same time the Bauhaus ideas started to spread in America, the Academy of Fine Arts (now the Faculty of Fine Arts) developed from the Belgrade's Art School, and it continued the tradition of its predecessor, by which a professor is equal to a program, and the base of learning is individual activity of research through visual media. Students were encouraged to explore diverse mediums and techniques, fostering a broader understanding of artistic expression. The intention was for students to be carefully trained in drawing, painting, sculpting and other tra-

ditional media, cultivating technical expertise as a prerequisite for the pursuit of unique self-expression. The Academy aimed to establish a balance between the preservation of traditional artistic values and trends in modern art. In 1973, the Academy joined the University of Arts in Belgrade, becoming the Faculty of Fine Arts, but the curriculum and approaches did not change. The current Dean of the Faculty, Dimitrije Pecić, states: “The responsibility of the generation of teachers currently employed at the Faculty is to achieve the continuity of the teaching programs, to review and preserve their confirmed ‘traditional’ values and harmonize them with the needs of modern times and new generations of students.” The availability of modern materials can only be counted among those needs of the modern age, while the curriculum relies on ‘proven’ methods.

The Serbian School of Drawing and Painting (Srpska crtačka i slikarska škola), founded in 1895 by Kiril Kutlik, changed its name to the Serbian School of Painting (Srpska slikarska škola) after the death of Kutlik and under the leadership of Rista and Beta Vukanović. The school was moved to their studio and there were changes in the curriculum – in addition to practical subjects, theoretical classes were introduced as part of the daily course (Trifunović, 1978; Paštrnakova, 2005). Plastic anatomy was taught by Vojislav Đorđević, perspective and styles by Svetozar Zorić, and the basics of aesthetics by Branislav Petronijević. At the same time that the Academy of Fine Arts was established, the idea of founding a high school for applied arts arose (named School of Arts and Crafts – Umetničko-zanatska škola). It was opened very quickly, as early as the following year. After the war, it continued working as the Academy of Applied Arts. In the School of Arts and Crafts, the subject of decorative art was taught by Dragutin Inkiostri Medenjak, who introduced detailed treatment of folk art and ornamentation, as well as foreign aesthetics of industrial production into the course content. He directed students towards the application of theory in craft and industrial processes, and with a vision to restore and theoretically formulate the national style, he relied on elements of folklore in his teaching (Vulešević, 1998). Methodologically, the focus was on applied arts, with an emphasis on practical learning and skills. Until the opening of this school, applied arts could be found in craft schools, while the School for the Application of Decorative Arts, which was founded by Margita Nušić Predić (1926/1927 to around 1935), was a place where the wealthy women of Belgrade studied, created and exhibited decorative objects (Popović, 2011). Limited resources, societal expectations, and evolving artistic paradigms posed significant hurdles for the continuation of the functioning of all schools in this period. Thus, the Academy also encountered numerous challenges, such as being located in the old building of the former Arts and Crafts School from the beginning of the 20th century, which fell into disrepair due to time and

warfare, and coping with the search for teaching staff. Belgrade artists with or without teaching experience were employed, but with effort, the Academy slowly made its way through artistic circles, and its influence in the field of applied arts and design was recognised during the Yugoslav period, until it was elevated to the status of a Faculty in 1973.

The traditional teaching practices present in all art institutions of that era were primarily intended to encourage creative activity, but also critical thinking and analytical skills. Students were challenged to engage deeply with art history, theory, and critique. This intellectual rigor fostered a reflective approach to creativity, enabling artists to contextualise their work within broader artistic movements and societal narratives. The ability to critically assess their own creative output became a valuable asset in their artistic journey.

Traditionalism and conservatism were incorporated in the educational foundations of art schools, from the Art School in Belgrade to the Academies of Fine and Applied Arts, but a large number of artists influenced Serbian art by bringing home Western progressive ideas after studying abroad. Although these ideas arrived in their altered and softened form, solid foundations were laid for the further development of art.

CONCLUSION

Busy with its border instability and the preservation of unity within the expanded Yugoslav perspective, more of the state's attention was paid to the artist as a 'finished product' and to studying abroad as a matter of prestige. The state's goal to form an image of a progressive and prosperous united country, but also the desire to be accepted in the world, led to the glorification of everything that was imported, as opposed to what was created within its own framework. At the same time, the idea of Yugoslav unity and the pursuit of creating a national art led to an emphasis on traditional medieval values and attempts to stop the process of the Europeanization of art style. The art scene did consist of artists who studied abroad, mostly in Paris, but afterwards they adapted those experiences to the taste of their domestic environment. Protić (1970, p. 112) finds the explanation for the non-existence of pure cubism or pure abstraction in our region in the sociological factors of society, where "our environment could not receive either intellectually or materially" what existed in the world, and "the autonomy of the image was allowed as a freer way of representation, but not as an attempt to abolish representation itself." The same reason can be an answer to the question of the non-existence of art education schools with more advanced curricula, principles and ideas. Due to the frequent major changes on the political scene, the country's need to preserve its cultural heritage and artistic tradition played a significant role. Traditional methods provided a strong technical foundation, ensuring that

students could proficiently execute their artistic visions. The human need for continuity and for the preservation of a war-shaken identity are other important reasons (Protić, 1970, p. 112). The demand for figurative art and classical techniques persisted, shaping the curriculum to align with the prevailing tastes and preferences of both the audience and aspiring artists. Additionally, the continuity of traditional methods served as a bridge between generations of artists, preserving a sense of artistic lineage and cultural identity. This connection to the past was supposed to allow the transmission of artistic knowledge and skills from experienced artists to emerging talents, ensuring the preservation of artistic techniques that were valued within the community. Students were encouraged to appreciate balance and harmony, the focus was on aesthetics and cultivating sensibility, enabling artists to create visually compelling and emotionally resonant works of art. Through the traditional approach to teaching, the aim was to nurture exceptional aesthetic values. The positive side of this approach was also an attempt to instil in the students the awareness of the importance of the permanence of creativity, which would very soon be shaken by the influx of new commercial products that promised a faster arrival to a creative solution, or the embodiment of the most extravagant ideas of artists.

However, it is not a matter of the response to European movements in our region, nor of the changed form in which they arrived, but rather the underdeveloped art education in Yugoslav Serbia that redirected a large number of talents, important figures today, to study in other countries, in Paris, Munich, Vienna, Prague, and Weimar. It is precisely the matter of this 'large number,' and not only of individuals, which indicates the awareness of the insufficiency of the Serbian art education of that period for greater personal growth.

At the same time, considering the social, economic and ideological problems of the Kingdom, it can be concluded that there was no opportunity for attempts towards more radical changes in art education and the establishment of more progressive schools of art. It must be borne in mind that Yugoslavia was a heterogeneous state, in the historical, political, economic, social, linguistic, cultural and religious sense. It was a society that had just emerged from a centuries-old vacuum under occupation, which fought year after year for its sovereignty, and then found itself again in the midst of war. The only problem that the Kingdom may have avoided was a war with institutionalised progressive ideas and 'advanced cultures,' like the struggles that German society waged against the Bauhaus. In the Kingdom of Yugoslavia, changes in creative work as products of the 'accomplished artist' were more gradual, and could only meet with approval or disapproval from the audience.

Traditional teaching practices focus on timeless skills that have been passed down through generations. These skills, such as drawing,

anatomy, and composition, remain relevant regardless of technological advancements. Contemporary art pedagogy should continue to balance technical proficiency with intellectual inquiry, nurturing well-rounded artists capable of critically engaging with societal issues. This is what is missing in today's time, in which there is a noticeable decline in self-criticism, as well as intellectual support for artistic extravagance. Today, in artistic educational institutions, creative expression is placed before all other teaching subjects in which the requirements and criteria are being lowered. Future art education methodologies should maintain a balanced curriculum encompassing traditional skills, contemporary techniques, and critical theory. A well-rounded education equips students to adapt to evolving artistic landscapes. Art education should instil a passion for life-long learning and intellectual growth, and artists must constantly adapt to new technologies and social changes.

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ОДЈЕЦИ МОДЕРНЕ: ТЕНДЕНЦИЈЕ У УМЕТНОСТИ ИЗМЕЂУ ДВА СВЕТСКА РАТА И УТИЦАЈ НА ПЕДАГОШКЕ ПРИСТУПЕ У ШКОЛАМА ЗА УМЕТНОСТ

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Резиме

Потреба за опоравком и обновом је била заједничка за све земље које су биле укључене у Први светски рат, али начини на које су отклањане ратне последице зависили су од свеукупног стања друштва пре и након рата. Осим на свеукупну слику уметности коју чини стваралаштво друштвено ангажованог бића, културна и социјална перспектива, развој индустрије и машине и владајућа политичка идеологија утичу на изградњу образовног система, а додатно, претходно стање и новонастале тежње на уметничкој сцени утичу на уметничко образовање. Не треба

раздвајати везе уметника од школе у којој су његова личност и специфичан ликовни израз обликовани, уметника од политичке, економске и социјалне ситуације у којој живи, као ни целокупно друштво коме уметник и школа припадају од проживљене прошлости која их је обликовала.

Док су се у многим Европским градовима отварале школе за уметност са прогресивним идејама, попут Баухауса, Високе школе за индустријско образовање у Улму или Вхутемаса, у југословенским земљама се комплексна друштвена и културна ситуација одразила и на уметничке образовне институције које су остале привржене традиционализму. Авангардне уметничке идеје Запада стигле су на наше просторе посредством великог броја уметника који су се школовали у иностранству, али у измењеном и ублаженом облику под утицајем владајућег традиционализма. Осим што је процес европеизације у уметности текао веома споро, постајала су и залагања против авангарде и стилске разноврсности модерног друштва чија би индивидуалност била опасност за традиционалне вредности. Иностранци уметнички покрети стигли су са закашњењем у облику посткубизма ублаженог у традиционализму, сезанизму и неокласицизму, и експресионизма обележеног социјалистичким тежњама, док је дадаизам нашао своје активне бунтовне следбенике, али истовремено подстакао настанак зенитизма и групе Зограф који су ширили идеје супротне модернизму и који су били преокупирани жељом да створе балканску, националну уметност. Иста се ситуација читавала и у уметничком образовању, које је било под утицајем минхенске и париске школе претходног века, те њихових колористичких и импресионистичких традиционалних тема пејзажа, мртве природе и цртања и сликања према моделу.

Овај рад се бави разматрањем паралелних дешавања у уметности у Европи, Америци и Русији наспрам Југославије у међуратном периоду, и разлозима због којих се прогресивне идеје у уметничком образовању нису појавиле у школама за визуелне и примењене уметности у Краљевини Срба, Хрвата и Словенаца, касније Краљевини Југославији, а какав се приступ настави задржао и до данас у српским школама уметности.




INFLATION TARGETING AND ECONOMIC GROWTH IN THE CESEE COUNTRIES

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Abstract

The paper compares the economic performance of countries that apply the monetary regime of inflation targeting (IT) and countries that apply alternative monetary regimes in the CESEE (Central, Eastern, and Southeastern Europe) region. The paper aims to assess whether the IT monetary regime has contributed to greater positive effects on economic performance in the group of countries that use inflation targeting as a monetary strategy compared to other groups of countries with alternative monetary strategies. The methodology of comparison was applied, namely the statistical technique Difference in Difference (DID), according to Ball and Sheridan (2005) and Goncalves and Salles (2008). After the introduction of IT, there was a fall in inflation rates (but the significance of IT is artificial) and a reduction in the volatility of inflation and gross domestic product (GDP), leading to a stabilisation of economic growth. The results of the analysis indicate that during the period of analysis (1990–2020), there was an improvement in economic performance after the introduction of inflation targeting in the group of countries that use that monetary strategy, but also in other groups of countries. However, the results show that economic performance is a little better in the group of countries that applied inflation targeting as a monetary regime.

Key words: inflation targeting, inflation, economic growth, GDP, CESEE.

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ЦИЉАЊЕ ИНФЛАЦИЈЕ И ПРИВРЕДНИ РАСТ У ЗЕМЉАМА ЦЕНТРАЛНЕ, ИСТОЧНЕ И ЈУГОИСТОЧНЕ ЕВРОПЕ

Апстракт

У раду се врши поређење остварених економских перформанси земаља које примењују монетарни режим циљања инфлације и земаља које примењују алтернативне монетарне режиме у земљама Централне, Источне и Југоисточне Европе. Циљ рада је да се процени да ли је монетарни режим циљања инфлације допринео већим позитивним ефектима на економске перформансе у групи земаља које примењују циљање инфлације као монетарну стратегију у односу на другу групу земаља које користе алтернативне монетарне стратегије. Примењена је методологија поређења према студијама Бол и Шеридан (2005) и Гонсалвес и Салз (2008). Након увођења циљања инфлације, дошло је до пада стопа инфлације (али је значај варијабле циљања инфлације вештачки) и смањења волатилности инфлације и бруто домаћег производа (БДП), што доводи до стабилизације привредног раста. Резултати анализе указују да је током периода анализе (1990-2020.) дошло до побољшања економских перформанси након увођења циљања инфлације код земаља таргетара, али и до побољшања и код земаља нетаргетара. Ипак резултати указују да су економске перформансе мало боље код земаља које примењују циљање инфлације као монетарни режим.

Кључне речи: циљање инфлације инфлација, привредни раст, БДП, ЦЕСЕЕ.

INTRODUCTION

The monetary strategy of targeting inflation was a revolutionary idea that was primarily 'born' in economically developed countries. After a long period of hyperinflation, industrially developed countries (for example, Latin America) successfully established control over the level of inflation and reduced it to a single-digit level. Later, the application of this concept experienced an expansion from more prosperous, developed countries to developing countries and countries in transition. The central banks of these countries have successfully controlled inflation through profound changes in the conduct of monetary policy and anti-inflationary policy. This monetary policy is based on transparency, independence, and credibility, and the only monetary scheme that combines these virtues of the central bank with the pragmatic use of policy instruments is certainly inflation targeting (Loayza & Soto, 2002, p. 5). Although the application of this monetary regime is widespread, there are conflicting opinions regarding its effectiveness. As other monetary strategies did not result in the desired outcome, many countries started implementing the concept of inflation targeting.

The concept of inflation targeting was first introduced and adopted in New Zealand in 1990. The Central Bank of New Zealand adopted a formal inflation-targeting framework in 1989, which was introduced un-

der the Central Bank of New Zealand. Milenković and Davidović (2009) state in their study that the application of inflation-targeting helps target countries maintain stable and low inflation in the long term, which resists the influence of external shocks (oil shocks, exchange rate shocks). With this, the monetary policy gains efficiency, which is reflected in keeping the inflation level close to the target. Malović (2014) points out that in practice, especially in countries in transition, flexible inflation targeting is applied more often, which targets inflation in a slightly wider target range, thus leaving room for the national economy's development. In this paper, we dealt with the effectiveness of the monetary regime targeting inflation on economic performance through macroeconomic variables: inflation, volatility of inflation, gross domestic product, and volatility of the gross domestic product. We chose a sample consisting of the countries of Central, Eastern, and Southeastern Europe (CESEE). The reason for choosing this sample lies in the different economic developments of these countries, as well as the differences in terms of the monetary policy strategies that they apply. The sample consists of a total of 19 countries (Russia and Ukraine are excluded from the sample due to the short period of implementation of inflation targeting), 8 target countries, and 11 non-target countries. The analysis is performed with annual data for the period between 1990 and 2020.

The research problem is a practical and econometric examination of the impact of the monetary strategy of inflation targeting on economic growth, and a comparison of the achieved economic performances of target countries and non-target countries in the CESEE region. Since the main goal of this monetary policy strategy is to ensure low and stable inflation, it should have a positive effect on economic growth, that is, on the growth of the real gross domestic product rate, as its indicator. As there are controversies regarding the relationship between inflation and economic growth, as well as the effectiveness of inflation targeting as a monetary policy regime, we will try to prove that stabilising inflation encourages real GDP growth, or at least does not hinder its growth, and that the monetary strategy of targeting inflation has proven to be more effective compared to other regimes of monetary policy, which consequently leads to the growth of the real gross domestic product of the countries in the sample. To determine the effectiveness of the aforementioned monetary strategy, we will compare the realised effects of inflation targeting on the economic performance of the target countries (the treatment group) and non-target countries (the control group) using the DID statistical technique.

The main objective of the analysis is to assess whether the adopted inflation targeting regime contributed to greater positive effects on economic performance for the countries that apply it, using non-target countries as a 'control group.'

H0 – The application of the monetary strategy of targeting inflation leads to the lowering of the level of inflation rates, reducing the volatility of inflation and the volatility of GDP, which leads to the stabilisation of the GDP growth rate and, thus, to the stabilisation of economic growth.

H1 – Inflation targeting leads to a reduction in the level of inflation, inflation volatility, and GDP volatility in the target countries.

H2 – The positive effects of IT on the economic performance of the target countries are greater than the positive effects of other (alternative) monetary regimes.

The paper is divided into six parts. In the first part, the research methodology used is presented. A description of the variables and the model used in the analysis is given in the second part. The third part includes all the results of the analysis. The discussion and conclusion are presented in the fifth and sixth parts of the paper.

LITERATURE REVIEW

Despite extensive research, the empirical evidence on the performance of the monetary regime inflation targeting is still inconclusive. Inflation targeting as a monetary strategy has stable and low inflation as its primary goal. There are numerous studies on whether it is effective in achieving its main goal. The optimistic view on inflation targeting is based on empirical evidence from research that shows that the application of this monetary regime leads to the reduction of high levels of inflation rates to acceptable percentages (it is considered that the inflation rate in the range of 3-5% has a stimulating effect on the economy), and reduces its volatility. The authors who proved this thesis conducted research in a large number of countries and presented it in their works: Mishkin and Schmidt-Hebbel (2007), Batini and Laxton (2007), Goncalves and Salles (2008), Lin and Ye (2009), De Mendonca and De Guimaraes e Souza (2012), Valera, Holmes, and Hassan (2018), and Samarina, Terpstra, and De Haan (2014).

On the other hand, the opponents of this position and opinion, through the results of their research, indicate that there is a weak correlation link or that the introduction of a monetary strategy of inflation targeting has no effect on the inflation movement itself. This is evidenced by the works of Ball and Sheridan (2005), Goncalves and Carvalho (2009), and Brito and Bystedt (2010), while the authors Dueker and Fisher (2006) as well as Lin and Ye (2007), through their research on a sample of target countries and non-target countries, indicate that there are no significant differences in inflation levels. Also, there are conflicting opinions on whether inflation targeting has a positive effect on economic growth. In the research of the theoretical assumptions for this thesis, it is emphasised that the effect of the introduction of the monetary regime of inflation tar-

getting depends on the initial level of economic growth (e.g., Gupta (2011)), while other authors, such as Cordero (2007), emphasise the negative impact of inflation targeting on economic growth. One group of authors, such as Bernake, Laubach, and Mishkin (1999), Mishkin (1999), Bernake (2003), and Svensson (2007), indicates that after the introduction of the monetary regime of inflation targeting, a certain degree of stabilisation is achieved in the real economy. Empirical evidence on the effects of inflation targeting real economic growth is also far from conclusive and uniform. After reviewing previous empirical research, a certain group of empirical studies, conducted by Mishkin (2001), Neumann and von Hagen (2002), Ball and Sheridan (2003), Apergis and Panethimitaki (2008), Mollick, Cabral and Carniero (2011), Amira, Mouldi and Feridun (2013), Ayeres, Belasen and Kutan (2014), Aquir (2014), and Souza, Mendoca and Andrade (2016), indicates that there is a positive impact of the monetary strategy of targeting inflation on economic growth, while another group of researchers who oppose this opinion, such as Lavoie (2002), Fraga, Goldfain and Minella (2003), Libanio (2005), Mishkin and Schmidt-Hebbel (2007), Frang, Lee and Miller (2009), and Brito and Bystedt (2010), suggest the opposite with their results. Examining the impact of this monetary strategy on economic growth, Ayeres, Belasen, and Kutan (2014) stated that it is minimal, but that there is a statistically significant increase only in certain regions, such as Europe, Latin America, and the Middle East.

According to the study, Brito and Bystedt (2010) point out with empirical evidence that there are variations in the introduction of this monetary regime by country, as well as that there is a negative relationship between average inflation and its volatility, and that there is a strong negative relationship between inflation and economic growth. Mollick, Cabral, and Garneiro (2011) studied the impact of inflation targeting on economic growth in a group of 55 countries, of which 22 are developed countries and 33 are developing countries. The results of the study indicate that, with the transition to strict inflation targeting (IT-full fledged), real GDP growth rates are also higher, regardless of whether developing countries or developed countries are examined. Contrary to the static model of the panel analysis, the dynamic model estimated that the long-term effect of inflation targeting developing countries is lower than with the static model. The reason lies in the fact that developing countries switched to this monetary regime much later, so the full effects on real economic performance were lagging compared to developed countries. Abo-Zaid and Tuzemen (2012), using the Diff-in-Diff methodology, point out that after a comparative review of the implementation of inflation targeting in the analysed countries, inflation rates were reduced, which supported economic growth. Souza, Mendoca, and Andrade (2016) highlighted the period of the financial crisis (2008), wherein they con-

cluded that in those countries that applied inflation targeting as a monetary strategy, economic performance was significantly better after the financial crisis compared to non-targeting countries. The conclusion of the study by author Aquir (2014) was based on the fact that the application of this monetary regime ensures better macroeconomic performance, thus enabling sustainable economic growth through low and stable inflation. Soe and Kakinaka (2018) calculated the volatility of income, inflation, GDP, the growth of the amount of money in circulation, and the real growth of the money balance (money balance growth). The results of the study present the argument that the effectiveness of the application of the monetary regime of inflation targeting could be increased if the monetary aggregate M1 (money supply) was included as an appropriate instrument within this regime in developing countries.

The research conducted by Valera, Holmes, and Hassan (2018) was aimed at examining the relationship between inflation targeting and its volatility through the GARCH (Generalized Autoregressive Conditional Heteroskedasticity) volatility model. The results of the research indicate that the analysed countries that apply this type of monetary inflation targeting strategy, compared to those countries that do not apply it, managed to reduce inflation levels and inflation volatility. Also, the results show that inflationary shocks are increasing for both groups of observed countries (targeters and non-targeters). In their study, Amira, Mouldi, and Feridun (2013) examined the impact of the application of the monetary regime of inflation targeting on the growth of real GDP and its volatility. The results showed that there is a significant relationship between inflation targeting and the volatility of real economic growth, which also implies the stabilisation of economic growth in the short term due to the stimulus of inflationary expectations. Empirical evidence shows that, although the implementation of the monetary regime of inflation targeting results in higher economic growth, it does not guarantee the stability of real GDP growth. The reason for this is that the effectiveness of this way of conducting monetary policy decisively depends on the structural parameters of the country's economy and external dynamics. In an empirical study conducted by Goncalves and Salles (2008), target countries and non-target countries were compared. The results of the research proved that the choice of applying the monetary regime of inflation targeting proved to be beneficial for developing countries and new economies, in the sense that the decline in high inflation rates in developing countries can be attributed to the application of this monetary regime. Also, the authors point out that the volatility of economic growth in target countries is reduced compared to countries that apply other alternative monetary strategies. Apergis, Miller, Panethimitakis, and Vamvakidis (2005) used the IS-LM model in their research on a sample of OECD countries (the Organization of Economic Cooperation and Development)

for the period between 1974 and 2001. The results of the study point out that the gap between the average GDP and the average inflation rate decreases at higher targeted inflation rates. Also, there is a negative correlation between the average GDP rate and the average inflation rate. If monetary and fiscal policy is directed towards the stabilisation of inflation, it will automatically lead to the stabilisation of the GDP if the economy faces shocks arising from the demand side. If the shocks are manifested on the supply side, the stabilisation of inflation will lead to an increase in the variability of real GDP.

Öztürk, Sözdemir, and Ügler (2014) analysed GDP rates in developed and developing countries that apply a monetary strategy of targeting inflation. The results of the studies indicate that both groups of countries applying this monetary regime managed to reduce inflation rates. Before and after the country's financial crisis, the targeters recorded fewer fluctuations in inflation rates. Also, the authors point out that target countries have better macroeconomic performance compared to non-target countries, except for the period between 2007 and 2009, when the effects of the financial crisis were most intense. In a paper that deals with the connection between the monetary strategy of inflation targeting and its uncertainty, Taş (2012) introduces the GARCH methodology (a basic model that is upgraded with leverage effects) and GARCH into the conventional model of inflation variances. The author examines the relationship between the level and volatility of inflation in a sample of 26 countries, which are divided into groups of developing countries and developed countries. Empirical results indicate that the monetary strategy of inflation targeting helps countries that implement it conduct monetary policy in the best possible way. This study supports the monetary strategy of inflation targeting, and the author of the paper suggests that those countries struggling with high levels of inflation rates should consider introducing this monetary strategy.

DATA AND METHODOLOGY

By the set goals and hypotheses of the paper, the need to analyse a larger group of data over a longer period is highlighted. As the effects of the introduction of the monetary strategy of inflation targeting do not stand out significantly in shorter periods, 1990 was taken as the starting year in the analysis, because that year marked the first presentation of this alternative monetary strategy in New Zealand. The sample of countries consists of 19 European countries (Russia and Ukraine are excluded from the analysis) which make up the CESEE region of European countries compiled by the International Monetary Fund. The following table (Table 1) shows the CESEE countries included in the sample for analysis. The countries are divided into two groups: 8 target countries — countries that

apply the IT monetary regime, and 11 non-IT countries — countries that apply other alternative monetary regimes.

Table 1. Countries in the CESEE region included in the Sample

IT countries	Year of adoption IT	Non-IT countries	
Czech Republic	1998	Bulgaria	Montenegro
Poland	1999	Croatia	North Macedonia
Hungary	2001	Estonia	Belarus
Albania	2009	Latvia	
Romania	2005	Lithuania	
Serbia	2009	Slovakia	
Turkey	2006	Slovenia	
Moldova	1998	Bosnia and Herzegovina	

Note: Russia and Ukraine were excluded from the analysis due to the short period of application of the IT monetary regime. Russia implemented the IT regime in 2015, and Ukraine in 2017.

The specificity of the selection of this sample lies in the heterogeneity and specificity of the countries in terms of economic development, membership in the European Union, and the European Monetary Union, as well as in terms of the process of transition. The planned analysis will be carried out for the period between 1990 and 2020 to see the effects of the monetary inflation targeting regime on economic growth as clearly as possible. Also, the longer period of the analysis and assessment is connected with the fact that countries implemented this way of conducting monetary policy in different periods (years), namely: Albania (2009), Czech Republic (1998), Hungary (2001), Moldova (2010), Poland (1999), Romania (2005), Serbia (2009), and Turkey (2009). Therefore, the effects themselves are different by country.

THE DESCRIPTION OF VARIABLES AND MODELS

As there is a problem – namely, that the significant reduction in inflation rates after the introduction of the IT regime in countries that initially had high inflation rates is not a direct result of the IT regime, Ball and Sheridan (2005) introduce an independent variable, which is the initial value of the dependent variable. This approach involves determining the average value of the observed economic variable for each country and determining whether there has been an improvement. However, to attribute that improvement to inflation targeting, one must compare the improvements in target and non-IT countries.

We applied the DID methodology. Difference-in-differences is an analytical approach that facilitates causal inference even when randomisation is not possible. Difference-in-differences combines two methods to

compare the before-and-after changes in outcomes for treatment and control groups, and to estimate the overall impact of the program. The DID methodology was used by Ball and Sheridan (2005) and Gonclaves and Salles (2008). We also examined whether changes in the movement of average inflation, volatility of inflation, and volatility of gross domestic product were greater in target countries compared to non-target countries.

We used annual inflation rates and annual gross domestic product growth rates from International Financial Statistics. We estimated the following regression:

$$X_{post} - X_{pre} = a_0 + a_1 IT + \varepsilon \quad (1)$$

X_{post} – the value of the variable in the post-target period;

X_{pre} – the value of variable X in the period before targeting;

IT – an artificial variable that takes the value 1 if the country uses inflation targeting as a monetary strategy, or 0 if it is not;

a_1 – regression parameter that measures the effects of targeting on the dependent variable.

It is possible to evaluate several models by varying the pre-targeting period in the sample. Since the initial value of the observed dependent variable can differ significantly, the initial value of the dependent variable is also included in the model as an independent variable. Namely, this regression model can lead to wrong conclusions. According to Ball and Sheridan (2005), the transition to an inflation-targeting regime was most attractive for those countries that had very poor economic performance. Therefore, the level of improvement will also depend on the starting conditions, so often the average values of inflation in the pre-target period in these countries are very bad, so the improvement is greater than in those countries that are not in the inflation targeting regime. Hence, the following regression model is evaluated to determine the influence of the initial value of the dependent variable on its improvement.

$$X_{post} - X_{pre} = a_0 + a_1 IT + a_2 X_{pre} + \varepsilon \quad (2)$$

In this regression, the coefficient with the artificial variable shows the effect of targeting the dependent variable with the given initial performance. If that coefficient is statistically significant, then the improvement in the target countries with initially poor performance is greater than the improvement in the non-target countries with similar initial economic performance.

The analysis aims to assess the effectiveness of the inflation targeting regime in improving the economic performance of the target countries in comparison to the non-target countries, which we used as a ‘control group.’ That is, we are interested in the economic and statistical significance of the parameter a_1 . This analysis requires defining the dividing

line between what is called the ‘start’ and ‘end’ periods. Defining the demarcation date between the end of the initial period and the beginning of the final period is simple for the target countries, that is, countries that apply inflation targeting as a monetary strategy. For the group of IT countries, this date includes the year in which a certain country adopted the inflation targeting regime in the first six months of that year, or the following year otherwise.

Setting dates for non-IT countries involves an inevitable degree of arbitrariness. Ball and Sheridan (2005), as well as Gonclaves and Salles (2008), defined this date for non-target countries as the average date of adoption for a group of target countries by calculating the arithmetic mean. In our sample, the calculated average adoption date for the target countries was 2005. Since we used the countries of the CESEE region as our sample, most of the countries had periods of hyperinflation during the early 1990s. Some such target countries are Poland, Serbia, Turkey, Albania, Romania, and Moldova, and some such non-target countries are Croatia, Bulgaria, Estonia, Latvia, Lithuania, Slovenia, North Macedonia, and Belarus. In order not to reach the wrong conclusions due to the period of hyperinflation, we excluded the years when inflation rates were over 50% from the observation. Since this is a general problem of research on the movement of inflation in many developing countries, many authors, such as Gonclaves and Salles (2008), Brito and Bysted (2010), and Amira Mouldi and Feridun (2013), have similarly solved this problem in their research.

Goncalves and Sales (2008) state that in the traditional DID methodology, the initial and final periods are the same for the control and treatment groups. Although the application of this method is somewhat random, calculating the average date of the introduction of the IT regime introduces a certain symmetry into the analysis. Also, they ran the same regressions using 1997 and 1999 as the years demarcating the initial period, but these changes in the analysis did not substantially affect their results.

RESULTS

Fall in Inflation as a Dependent Variable

When we used the inflation rate as a dependent variable in the model, we used three samples. All three mentioned samples include a group of IT countries (Czech Republic, Poland, Hungary, Albania, Romania, Serbia, Turkey, and Moldova) and a group of non-IT countries (Bulgaria, Croatia, Estonia, Latvia, Lithuania, Slovakia, Slovenia, Bosnia and Herzegovina, Montenegro, North Macedonia, and Belarus). Russia and Ukraine have only recently introduced an inflation-targeting regime,

so due to the short period of the application of this regime and the possibility of obtaining wrong results and interpretations, we excluded them from the analysis.

The first sample includes changes in average inflation rates, where the initial period is 1990 and the final period is 2020. In this sample, we calculated the decline in inflation for the entire period of analysis using the arithmetic mean. The drop in inflation is noticeable in both of the observed groups, even though the average drop in inflation is slightly higher in countries that apply inflation targeting.

In the second sample, we used the initial period of analysis differently for the observed groups of countries. For target countries, it is the date of adoption of inflation targeting, and for non-target countries, we use the average date of introduction of IT for target countries (2005). The drop in inflation in this sample is on average higher in the target countries compared to the non-target group. What we can conclude is that the final inflation before the introduction of the monetary inflation targeting regime in the target countries was almost twice as high on average compared to non-target countries (using 2005 as a hypothetical year).

In the third sample, we analysed the period after the introduction of inflation targeting. The initial period is the year after the introduction of inflation targeting as a monetary strategy. Based on the calculated averages, we obtained a result that indicates that the average drop in inflation in the group of IT countries is slightly higher than in non-IT countries.

Table 2. IT countries – Fall in inflation

Country (IT)	Year of IT adoption	Sample 1 (1990-2020)	Sample 2 (Before IT)	Sample 3 (After IT)
Czech Republic	1998	-7,93	-3,3	-7,54
Poland	1999	-42,73	-34,5	-3,78
Hungary	2001	-25,04	-18,57	-5,79
Albania	2009	-20,95	-19,21	-0,61
Romania	2005	-29,61	-20,37	-6,38
Serbia	2009	-21,73	-10,9	-6,54
Turkey	2006	-32,68	-36,78	+2,68
Moldova	1998	-26,10	-29,93	-3,71
Mean	2005	-25,85	-21,70	-3,96

Source: Author's calculation

The previous table (Table 2) shows the decline in the inflation rate in the target countries – countries that apply the IT monetary regime, for the three analysed periods. The first sample refers to the complete period of analysis, the second sample refers to the period before IT, and the third sample refers to the period after the introduction of IT.

In the first sample, the largest drop in the inflation rate was recorded in Poland (-42.73%), and the lowest in the Czech Republic (-7.93%). The Czech Republic and Poland are the first developing countries to introduce the IT regime, and the first countries in the CESEE region. In the Czech Republic, inflation hovered around 10% until 1998, then recorded a decline and hovered around 2% until the end of the analysed period. Poland had periods of hyperinflation in the 1990s, and the recorded inflation in 1990 was as much as 568%.

In order not to get inflated results and illogical conclusions from the analysis, we excluded this period (1990–1992) from the analysis. After the introduction of the IT monetary regime, the biggest drop in inflation was recorded in the Czech Republic (-7.54%), followed by Serbia (-6.54%). Serbia also had a long period of hyperinflation (1990–2001); the inflation rate has dropped to around 2% as recently as 2014. Considering that Serbia introduced the IT monetary regime in 2009, these results of the IT regime proved to be effective. Turkey also had a long period of hyperinflation (1990–2001); inflation rates were over 50%, and in 1994 they were 105%. After the implementation of the new IT monetary regime in 2009, there was a slight increase in the inflation rate amounting to 2.68%. It is also the only target country in the CESEE region where inflation increased in the period after the introduction of IT (2006–2020). However, it is specific to Turkey which had the largest drop in the inflation rate before the introduction of the IT regime (-36.78 %). In this sample of IT countries, in addition to the mentioned IT countries, the countries that had a period of hyperinflation in the 1990s are Albania (e.g., 226%, 1992), Romania (e.g., 231%, 1991), and Moldova (e.g., 1,614%, 1993).

Table 3. Non-IT countries – Fall in inflation

Country (Non-IT)	Year of IT adoption (hypothetical year)	Sample 1 (1990-2020)	Sample 2 (Before IT)	Sample 3 (After IT)
Bulgaria	2005	-22,13	-12,52	-3,37
Croatia	2005	-3,18	-1,89	-2,55
Estonia	2005	-48,09	-44,6	-4,52
Latvia	2005	-35,70	-29,73	-6,53
Lithuania	2005	-38,45	-38,49	-1,46
Slovakia	2005	-7,95	-2,34	-0,77
Slovenia	2005	-31,81	-28,17	-2,5
Bosnia and Herzegovina	2005	-6,78	-5,45	-4,63
Montenegro	2005	-30,12	-26,76	-3,71
North Macedonia	2005	-15,17	-16,82	+0,67
Belarus	2005	-36,99	-24,44	-4,79
Mean	-	-25,12	-21,02	-3,11

Source: Author's calculation

Table 3 shows the decline in inflation rates in non-IT countries, where we determined the year of IT introduction to be the arithmetic mean of the years of IT introduction in countries (2005), as was done by the authors Ball and Sheridan (2005) and Gonclaves and Salles. (2008). Based on this and the specific hypothetical date of the introduction of IT in the non-IT countries, in the first sample, the largest drop in inflation was recorded in Estonia (-48.09%), and the lowest in Croatia (-3.18%). In the period between 1990 and 2005 (second sample), the largest drop in inflation was recorded in Lithuania (-38.49%) and the lowest in Croatia (-1.89%). In the period between 2005 and 2020, in 2008, the largest drop in the inflation rate was recorded in Latvia (-6.53%), and the lowest drop, i.e., an increase in the inflation rate, was recorded in North Macedonia (at 0.67%). In this sample of non-target countries, a period of hyperinflation was present in the following countries: Bulgaria (e.g., 1,058%, 1997), Croatia (e.g., 500%, 1990), Estonia (e.g., 90%, 1993), Latvia (e.g., 952%, 1992), Lithuania (e.g., 1021%, 1992), Slovenia (e.g., 552%, 1990), North Macedonia (e.g., 127%, 1994), and Belarus (e.g., 2,221%, 1994).

Based on the results presented in Tables 2 and 3, determined by the arithmetic mean of targeters and non-targeters in the first sample (1990–2020), a greater drop in the inflation rate was recorded in the group of target countries. In the second sample (1990–IT introduction period), a greater drop in the inflation rate was also recorded among the target audience, as was the case in the third sample (IT–2020 introduction period). Therefore, the results indicate that the drop in the inflation rate in all three of the analysed samples is greater in the target countries, emphasising the period after the introduction of the IT monetary regime, where the drop in the inflation rate is greater in the target countries compared to the non-target group. The difference in the fall in the inflation rate between the observed groups of countries is minimal, but it is present.

In this part of the paper, we wanted to determine whether excessively high inflation in the past led to huge drops in inflation from the initial to the final period in the observed countries, that is, whether the significance of the IT dummy variable was ‘artificially’ inflated.

According to the evaluated models (1) and (2) (Table 4), it can be observed that the dummy variable IT is not statistically significant in model 2, which was evaluated on the first sample. Estimated models that include the initial value of inflation indicate that this variable has a statistical impact on the decline in the value of inflation in all observed samples, and that the significance of the inflation targeting regime is inflated.

Table 4. Inflation regressions

Dependent variable:	Equation 1			Equation 2		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Fall in inflation						
IT dummy	0,7217	0,5747	0,8533	-2,7435**	-3,17419	-1,2575
Infpre				0,93335*	13897219***	0,5492**
Adjusted R ²	0,0579	0,058	0,0313	0,9659	0,864728	0,2020

Notes: * statistical significance at 1% ** statistical significance at 5%

*** statistical significance at 10%

Source: Author's calculation

Inflation Volatility and GDP Volatility as Dependent Variables

In the following analysis, we evaluated inflation volatility and GDP volatility using two initial periods, 1990 and 1996, to see if we would get different results in the direction of the effectiveness of inflation targeting in reducing inflation and GDP volatility. Inflation volatility and GDP volatility were calculated as standard deviations, according to Ball and Sheridan (2005) and Goncalves and Salles (2008).

Table 5. IT countries – Inflation volatility

Country (IT)	Sample 1 (1990-2020)	Sample 2 (1996-2020)
Czech Republic	-2,45	+1.30
Poland	-10,02	-1.67
Hungary	-5,39	-3.27
Albania	-9,17	-9.06
Romania	-10,14	-11.70
Serbia	-7,63	-8.76
Turkey	-14,30	-12.81
Moldova	-8,73	-8.33
Mean	-8,48	-6.79

Source: Author's calculation

We chose two initial periods in the analysis of inflation volatility in the target countries in order to obtain different results and be able to compare them with each other. When we took 1990 as the initial year in the analysis, the biggest reduction in inflation volatility was recorded in Romania, and when we took 1996 as the initial year, this reduction was recorded in Turkey. In the Czech Republic, inflation volatility increased in the second sample (1996–2020) compared to the first sample (1990–2020). If we compare samples 1 and 2, there is little difference in the average reduction in inflation volatility. In the second sample, the average

reduction in inflation volatility in the target countries is -6.79, while the volatility reduction is greater than -8.48 in the first sample.

Table 6. Countries non-IT – Inflation volatility

Country (Non-IT)	Sample 1 (1990-2020)	Sample 2 (1996-2020)
Bulgaria	-2,05	-2.54
Croatia	+0,36	+0.28
Estonia	-11,68	-3.76
Latvia	-6,98	-0.68
Lithuania	-10,68	-5.32
Slovakia	-3,36	-1.03
Slovenia	-6,36	-0.39
Bosnia and Herzegovina	+0,28	+0.63
Montenegro	-8,84	-7.43
North Macedonia	-2,92	-0.32
Belarus	-7,64	-5.35
Mean	-5,44	-2.35

Source: Author's calculation

As for the non-IT countries, the largest decrease in inflation volatility in the first sample (1990-2020) is present in Estonia (-11.68), while the lowest is in the case of Croatia and Bosnia and Herzegovina, where there was even an increase in volatility in the final period compared to the initial period of analysis. In the second sample (1996–2020), the greatest reduction in inflation volatility is present in Croatia (-7.43), and the lowest in Bosnia and Herzegovina and Croatia (these countries experienced an increase in inflation volatility in the final period compared to the initial period of the analysis). Therefore, by changing the initial period, we reached similar results in terms of inflation volatility. What is clear is that there was a double decrease in inflation volatility in the second sample compared to the first sample. As for Bosnia and Herzegovina and Croatia, it is clear that inflation volatility did not decrease in the mentioned countries even after 1996, and until the end of the analysis.

If we compare the results of the inflation volatility of the groups of IT countries and non-IT countries (Tables 5 and 6), we can conclude that there was a drop in the volatility of inflation in both of the observed groups. What can be pointed out is that the drop in inflation volatility in both samples is greater in the IT countries.

Table 7. IT Countries – GDP volatility

Countries (IT)	Sample 1 (1990-2020)	Sample 2 (1996-2020)
Czech Republic	-2,71	-0.26
Poland	-3,50	+0.15
Hungary	+0,82	+1.38
Albania	-8,19	-3.50
Romania	-2,25	-0.96
Serbia	-2,14	-2.54
Turkey	-1,15	-1.28
Moldova	-7,39	-1.14
Mean	-3,31	-1.02

Source: Author's calculation

In the same way, we analysed GDP volatility using two initial periods of analysis (1990 and 1996). The largest drop in volatility in the first sample of GDP is present in Albania, and the smallest (even an increase) in volatility is in Hungary. In the second sample, the largest drop in GDP volatility was recorded in Serbia, while the increase in GDP volatility was the largest in Hungary (as in the first sample). By changing the initial period of the analysis, we came to different average results for reducing GDP volatility. A larger drop in volatility was observed in the first sample (Table 7).

Table 8. Non-IT Countries – GDP volatility

Countries (Non-IT)	Sample 1 (1990-2020)	Sample 2 (1996-2020)
Bulgaria	-3,58	-4.04
Croatia	+1,75	+1.71
Estonia	+1,75	+2.29
Latvia	+0,73	+4.18
Lithuania	+2,24	+2.03
Slovakia	+2,00	+1.94
Slovenia	+3,07	+3.13
Bosnia and Herzegovina	-22,94	-7.02
Montenegro	+0,93	+0.78
North Macedonia	-1,54	+0.27
Belarus	-3,56	+1.35
Mean	-1,74	+0.60

Source: Author's calculation

In the group of non-IT, the largest drop in GDP volatility is present in Bosnia and Herzegovina in both the first and second sample. What can be highlighted is that almost all IT countries in both of the observed samples experienced an increase in GDP volatility. In addition to Bosnia and

Herzegovina, there was also a drop in GDP volatility in Bulgaria in both of the observed samples. When we compare the groups of IT and non-IT countries, it is clear that the drop in GDP volatility is greater in IT countries (with two initial periods of analysis). In the case of the non-IT countries, there was a smaller average decrease in GDP volatility in the first sample (Table 7), but there was an average increase in GDP volatility in the second sample (Table 8).

Table 9. Regressions of inflation volatility

Dependent variable:	Equation 1		Equation 2	
	Model 1 (1990)	Model 2 (1996)	Model 1 (1990)	Model 2 (1996)
Fall in inflation volatility				
IT dummy	3,0360	5,3360**	0,6249	2,4554
Volinfpre			0,9009*	0,71956*
Adjusted R ²	0,0901	0,2761	0,95389	0,63009

Notes: * statistical significance at 1% ** statistical significance at 5%

Source: Author's calculation

Similar conclusions can be drawn from Tables 9 and 10, where we analysed inflation volatility and GDP volatility. For all models, the initial value of inflation is statistically significant, which points to the conclusion that high initial values were of crucial importance for the drop in the volatility of the observed variables. The variable IT has a statistically significant influence in the model in which the drop in GDP volatility is analysed.

Table 10. Regressions of GDP volatility

Dependent variable:	Equation 1		Equation 2	
	Model 1 (1990)	Model 2 (1996)	Model 1 (1990)	Model 2 (1996)
Fall in GDP volatility				
IT dummy	1,5728	1,458095	1,3451**	1,5193**
Volgdppre			1,0366*	1,071535***
Adjusted R ²	0,0393	0,0144	0,9653	0,832849

Notes: * statistical significance at 1% ** statistical significance at 5%

*** statistical significance at 10%

Source: Author's calculation

The dummy variable IT has a statistical significance of 5% on the decline in inflation volatility in Model 1, where we took 1996 as the starting year of the analysis (Table 9). However, in Model 2, where the independent variables are IT and Volinfpre (pre-IT inflation volatility), it is clear that the impact of the IT dummy variable does not affect the fall in inflation volatility, but only the pre-IT inflation movement. Furthermore, the dummy variable IT affects the drop in GDP volatility with a statistical significance level of 5% in the second equation and in Model 1, where we took 1990 as the initial year, and in Model 2, where the initial year of analysis is 1996.

DISCUSSION

Using the DID statistical method, we examined the impact of the IT monetary regime on the movement of inflation, inflation volatility, and GDP volatility. We compared the realised effects of IT on the economic performance of IT countries, using them as a ‘treatment group,’ and non-IT countries, using them as a ‘control group.’

The hypothesis H0, which states that the application of the IT monetary strategy leads to a decrease in the level of inflation, a decrease in the volatility of inflation and the volatility of GDP, which leads to the stabilisation of the GDP growth rate, and thus to the stabilisation of economic growth, has been partially proven. Although there was a significant drop in inflation rates during the analysed period, and especially after the introduction of the IT regime, after the inflation regression was performed, the evaluated models (1 and 2) (Table 9) showed that the IT dummy variable has an ‘artificially’ inflated significance. The decline in inflation according to the estimated models that include the initial value of inflation (INFpre) points to the conclusion that this variable has a statistical impact on the decline in inflation rates in all of the observed samples, and that the statistical significance of the IT regime is inflated. Furthermore, we evaluated the volatility of inflation and the volatility of GDP. According to the obtained results, we can conclude that there was a drop in the volatility of inflation in both of the observed groups of countries (Tables 5 and 6). Only Bosnia and Herzegovina and Croatia did not decrease the volatility of inflation in any sample. Using the two initial periods of analysis (1990 and 1996) and examining the volatility of inflation, we also examined the volatility of GDP. In both of the observed groups, there was a decrease in GDP volatility, and thus a stabilisation of economic growth. Then we evaluated the volatility of inflation and GDP, and concluded that the IT dummy had a statistical impact on the drop in the volatility of GDP in both of the observed groups (Table 10).

The obtained results partially confirm hypothesis H1, which states that IT leads to a decrease in the level of inflation, volatility of inflation and volatility of GDP in the target countries – it was not proven that the IT dummy variable has a statistical impact on the drop in the level of inflation.

Hypothesis H2, which states that the positive effects of IT on the economic performance of IT countries are greater than the positive effects of other (alternative) monetary regimes in non-IT countries, has been proven. Based on Tables 2 and 3, we conclude that there was a drop in inflation in both of the observed groups of countries, with a slightly larger drop recorded in the countries that use IT as a monetary regime. Nevertheless, it is indicated in Table 4 that the IT dummy variable has an inflated statistical significance on the impact of the reduction of the inflation level, and that the INFpre variable had a greater statistical significance on

the reduction of the inflation level. As for the drop in inflation volatility (Tables 5 and 6), there was a drop in both of the observed groups of countries, but a greater drop in inflation volatility was recorded in the countries that use inflation targeting. Also, the results are similar in the analysis of the drop in GDP volatility, where there was a drop in GDP volatility (statistical significance 5%), but only in the groups of countries that use inflation targeting. In the case of non-IT, there was even a slight increase in the volatility of inflation. Therefore, when we compare the impact of the IT regime on economic performance, the positive effects are greater in the countries that use IT monetary regimes.

The limitation related to this research was hyperinflation, which was addressed by introducing an artificial variable into the analysis, neglecting all inflation rates above 50%. Additionally, some limitations are associated with the specificity of the sample countries included in the analysis. Countries that have implemented inflation targeting are at different levels of economic development, and at different stages and/or statuses where membership in the European Union and the European Monetary Union is concerned. However, the authors aimed to demonstrate whether there are differences in achieved economic performances by comparing the group of countries implementing inflation targeting with the group of countries applying other monetary strategies. Although the results showed slightly better economic performances in countries implementing inflation targeting, it is necessary to conduct an individual analysis for each country covering the period between the moment of introducing inflation targeting and the present moment. This way, a better picture of the effectiveness of inflation targeting as a monetary strategy and its impact on economic growth would be provided.

CONCLUSION

Based on the obtained results of the analysis done using the DID methodology, we came to the following conclusions. The IT monetary regime has not proven to be effective in reducing inflation rates in the observed group of countries (CESEE), which is its main objective. However, the IT regime has proven to be effective in reducing inflation volatility and GDP volatility. Comparing the achieved effects of the IT monetary regime, it is clear that there are greater positive effects on economic performance and the stabilisation of economic growth in countries that apply this monetary regime (targeters) compared to the group of countries that do not apply it. The limiting factor of this research is certainly the specific sample of countries in the CESEE region, since most countries had periods of hyperinflation during the 90s (except for the Czech Republic, Hungary, Slovakia, Bosnia and Herzegovina, and Montenegro). Then, some of the IT countries have a shorter period of application of the IT

monetary regime, and a longer period should pass for its successful effects. Excluding all limiting factors to obtain results as realistic as possible, we proved that the IT monetary regime is more efficient than other monetary regimes. Although the differences in the positive effects on economic growth are small, they still exist. For the IT monetary regime to be effective in achieving its goals, it is of great importance to provide the necessary preconditions for its implementation. In economically developed countries, the positive results of the introduction of the IT monetary regime are proven and more visible, and in developing countries, the effects of this monetary regime will only intensify over a longer period of application.

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ЦИЉАЊЕ ИНФЛАЦИЈЕ И ПРИВРЕДНИ РАСТ У ЗЕМЉАМА ЦЕНТРАЛНЕ, ИСТОЧНЕ И ЈУГОИСТОЧНЕ ЕВРОПЕ

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Резиме

Монетарна стратегија циљања инфлације је представљала револуционарну идеју која је првенствено „изнедрена“ у привредно развијеним земљама. Индустриски развијене земље су након дугогодишњег периода хиперинфлације (пример Латинске Америке) успешно успоставиле контролу над нивоом инфлације и свеле је на једноцифрен ниво. Касније, примена овог концепта је доживела експанзију од просперитетнијих, развијених земаља ка земљама у развоју и земљама у транзицији. У овом раду бавили смо се ефикасношћу монетарног режима циљања инфлације на економске перформансе, кроз макроекономске варијабле: инфлацију, волатилност инфлације, бруто домаћи производ и волатилност бруто домаћег производа. Изабрали смо за узорак земље Централне, Источне И Југоисточне Европе (ЦЕЕСЕ). Разлог избора овог узорка лежи у различитом привредном развоју ових земаља као и различитости у смислу стратегија монетарне политике које оне примењују. Узорак се састоји од укупно 19 земаља (Русија и Украјина су искључене из узорка због кратког периода примене циљања инфлације), 8 земаља таргетара и 11 земаља нетаргетара. Анализа се врши са годишњим подацима за период између 1990. и 2020. године. Пад инфлације према оцењеним моделима који укључују иницијалну вредност инфлације (ИНФпре) упућује на закључак да ова варијабла има статистички утицај на пад стопа инфлације у свим посматраним узорцима и да је статистички значај монетарног режима циљања инфлације надуван. Према добијеним резултатима, можемо закључити да је дошло до пада волатилности инфлације код обе посматране групе земаља, као и до смањења волатилности БДП, а тиме и до стабилизације привредног раста. Затим смо извршили оцену волатилности инфлације и БДП и закључили да је ИТ вештачка варијабла имала статистички утицај на пад волатилности БДП у обе посматране групе. Такође, слични су резултати и код извршене анализе пада волатилности БДП, где је дошло до пада волатилности БДП (статистичка значајност 5%), али само код група земаља таргетара. Код нетаргетара дошло је чак до благог раста волатилности инфлације. Дакле, кад упоредимо утицај монетарног режима циљања инфлације на економске перформансе, већи су позитивни ефекти код земаља таргетара.

GREENHOUSE VEGETABLE PRODUCTION IN THE FUNCTION OF SUSTAINABLE AGRICULTURAL PRODUCTION

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Abstract

A significant segment within the sustainable development of agricultural production and economic prosperity is production in controlled conditions, such as production in greenhouses and glasshouses. In the Republic of Serbia, vegetable production is almost entirely concentrated on family farms. Considering the importance of family farms, the subject of this study is a comparative analysis of vegetable production on family farms and vegetable production in greenhouses, as well as open-air vegetable production. In this context, the paper presents two models for optimising the vegetable production structure, using the method of linear programming and the software package *LINDO*. The first model refers to vegetable production in greenhouses (variant I) and the second one is formulated for open-air vegetable production (variant II). The analysis and solving models have pointed to differences in the optimal sowing-planting structure, in the number of independent variables or vegetables included in models, but also in realised net income, wherein variant I achieves both higher net income per hectare and higher production economy.

Key words: sustainable agricultural production, vegetable production, family farms, model, optimization.

ПРОИЗВОДЊА ПОВРЋА У ЗАШТИЋЕНОМ ПРОСТОРУ У ФУНКЦИЈИ ОДРЖИВЕ ПОЉОПРИВРЕДНЕ ПРОИЗВОДЊЕ

Апстракт

Значајан сегмент у оквиру одрживог развоја пољопривредне производње и економског просперитета је производња у контролисаним условима, као што је производња у пластеницима и стакленицима. У Републици Србији производња

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поврћа је скоро у потпуности сконцентрисана на породична газдинства. С обзиром на значај породичних газдинстава, предмет ове студије је компаративна анализа производње поврћа на породичним газдинствима и производње поврћа у пластеницима, као и производње поврћа на отвореном. У том контексту, у раду су приказана два модела оптимизације структуре производње поврћа, при меном методе линеарног програмирања и софтверског пакета *LINDO*. Први модел се односи на производњу поврћа у пластеницима (варијанта I), а други је формулисан за производњу поврћа на отвореном (варијанта II). Анализа и решења модела указали су на разлике у оптималној структури сетве-садње, у броју независних варијабли или броја култура укључених у моделе, али и у оствареном нето приходу, при чему варијанта I остварује и већи нето приход по хектару и већу економичност производње.

Кључне речи: одржива пољопривредна производња, производња поврћа, породична газдинства, модел, оптимизација.

INTRODUCTION

The concept of sustainability has become a key factor for the survival and progress of civilization and society. In order to achieve global sustainability, it is necessary to re-examine the opinion of ecology and the economy as opposing goals. Global thinking on this topic has also led to the first results related to agriculture, which are aimed at relieving global conventional production and eliminating the negativity of such development by focusing on alternatives based on biological or ecological principles (Kovačević, 2010).

To promote sustainable agriculture, we must move past focusing on these oversimplified relationships to disentangling the complex social and ecological factors, and determine how to provide adequate nutrition for people while protecting biodiversity (Ponisio and Ehrlich, 2016).

Sustainable intensification of agricultural production focuses on increasing yields, especially on land already used in agriculture (Pretty and Bharucha, 2014), or as some have called it 'land sparing' (Ceddia et al., 2014; Hulme et al., 2013). The overall strategy is to meet food needs while curbing agricultural expansion into marginal lands and into the relatively few remaining large tracts of land in natural habitat (Jordan et al., 2015; Doré et al., 2011).

Sustainable agricultural production as well as conventional agriculture relies on the application of various technologies in order to meet production needs (Tilman et al., 2011; Elliott and Firbank, 2013; Barnes and Thomson, 2014). They differ because sustainable intensification gives more importance to technologies and practices that reduce resource use, mitigate the effects of climate change and protect natural ecosystems (van Ittersum et al., 2013; Fish et al., 2014; Balwinder-Singh et al., 2015; Rochecouste et al., 2015).

In order to meet the growing demand for food globally, a large number of advocates of sustainable intensification of agricultural production consider that the use of biotechnology in food production is a key element in meeting the growing needs (Flavell, 2010; Bennett et al., 2013; Jacobsen et al., 2013; Teixeira et al., 2015).

According to some authors, the ways in which sustainable agricultural production can be realised in practice are specific techniques that define sustainable agriculture such as: biodynamic agriculture (Pechrová, 2014), integrated systems (Khan, 2011; Ogello et al., 2013) and permaculture (Ferguson and Lovell, 2014; Altieri et al., 2016). Some other authors believe that sustainable production can be realised in practice only on small and family farms (Kull et al., 2013; Dogliotti Moro et al., 2014; Woods, 2014).

The Republic of Serbia has the largest comparative advantage in the production of agricultural products and agro industry. Agriculture, as one of the carrying mega sectors, can contribute to economic development not only with its fast development, but also with its influence on the increase of the total level of productivity of a country, which does not oppose new employment (Marjanović and Marjanović, 2019).

Agriculture is one of the most important branches of Serbian economy. The share of agriculture in GDP, compared to the EU member states, is very high and amounts to 6.5% (Annual national accounts, 2022). In the Republic of Serbia, family farms are the most important production unit, both in production potentials and in production volume. The main contingent of workforce that determines the overall development of agriculture is concentrated on family farms. These farms should be a subject of special interest of agricultural policy. These are the farms which are engaged in different activities in the form of family business (tourism, trade services, trade, etc.), in the framework of rural households, and agricultural operation is secondary and not primary (Maletić and Popović, 2016).

The largest part of production potentials in agriculture is located on family farms, but as a whole, agricultural production on these farms is underdeveloped (Munćan and Živković, 2005). The Republic of Serbia is characterised by the relatively small size of land property and a large number of detachable parts and parcels, which indicates that the land is not rationally used as an objective condition for agricultural production and farm operation. Considering the importance of vegetable production for producers and for sustainable agricultural production, the basic directions of its future development are the optimal use of available production capacity, an increase in production volume, and the change of production structure (Novković et al., 2013).

Vegetable production is also very important from the aspect of using available natural resources and technological achievements, all in the

function of creation and income growth in agriculture (Stefanović and Stefanović, 2005). In addition, vegetable production represents an important raw material base for various forms of processing, but also greatly affects the development of the food industry.

Besides open-air vegetable production – in the field, a significant place is intended for indoor vegetable production – in greenhouses, which allows the growth and replacement of several cultures during the year, the combined off-season production, provides a several times higher yield compared to open-air production, and represents the most intense type of production. This type of production involves a very intensive use of land and represents the most intensive branch of plant production. However, due to high production costs, unfavourable financing conditions, and the fragmentation of land property, this type of production in greenhouses is still underused in our country, although there are great production potentials.

In order to improve vegetable production on family farms, it is necessary to solve the basic and ever-present problem of determining the optimal production structure. It means that it is necessary to determine such a production structure that provides maximum economic results in a given production, technical and economic conditions (Bošnjak, 1997).

Accordingly, the objective of this research implies determining such a structure of vegetable production in greenhouses as well as open-air vegetable production, which provides maximum economic results in the given production, technical and economic conditions. In this context, two types of models for optimising vegetable production structure are formulated, one that relates to vegetable production in greenhouses (variant I), and the other formulated for vegetable production in the open air (variant II). The optimal structure of vegetable production both in greenhouses and in the open air was obtained using the method of linear programming, which is also the basic method used for experimenting on models in this research.

Linear programming is one of the most frequently used quantitative techniques. There are many practical problems in the field of agribusiness which could be solved by linear programming (Thornley and France, 2007; Vohnout, 2003; Vico and Bodiroga, 2017). The presence of Operational Research in Agriculture and Forest Management applications is already extensive, but the potential for development is huge in times where resources are becoming increasingly scarce and more has to be done with less, in a sustainable way (Carravilla and Oliveira, 2013).

A great number of authors have dealt with this problem of determining the optimal vegetable production structure. In order to point out the possibility of rational land use, and to achieve better economic effects, in his paper, Radojević presented the model of linear programming for the optimal planning of vegetable production structure intended for industrial processing (Radojević, 2003). Using the method of linear program-

ming, Krasnić has performed model-based testing for optimising the vegetable production structure for industrial processing and for consumption in fresh condition (Krasnić, 2004). Novković et al. have paid special attention to the optimal structure of vegetable production on family farms (Novković et al., 2011). Aiming to define the optimal structure of vegetable production that will provide the best economic effects, which will meet the needs of the market and which will enable the intensive use of land, Nikolić analysed the vegetable production on family farms in Vojvodina (Nikolić, 2014).

MATERIALS AND METHODS

Taking into account a large number of limiting production factors, the process of determining the optimal production structure on family farms is a very complex task. In order to solve this problem, one of the most commonly used methods is the method of modelling. This method has been successfully used whenever it was not possible or was not rational to experiment on a real system, or on the research subject. It means that all relevant system attributes that are important for the research subject must be identified and analysed.

The primary method used for experimenting on the model is the linear programming method. Mathematically expressed, linear programming is a method for finding the optimum (minimum or maximum) of the linear function with the 'n' independent variables X_i ($i = 1, 2, 3, \dots$) that are connected by linear relations (equations or inequalities), or limiting conditions – constraints (Mihajlović and Novković, 2009).

The general problem of linear programming can be mathematically presented as follows.

(1) The objective function:

$$\sum_{i=1}^n c_i X_i = Z \rightarrow \max (V \rightarrow \min)$$

wherein the symbols have the following meanings: X_i - independent variables; $i - 1, n$; n - the number of independent variables in the model; c_i - the objective function coefficients; Z - the maximum value of the objective function; and V - the minimum value of the objective function;

(2) The constraints matrix:

$$\sum_{i=1}^n a_{ij} X_i \begin{matrix} \geq \\ \leq \end{matrix} A_j$$

wherein the symbols have the following meanings: $j - 1, m$; m - number of constraints in the model; a_{ij} - technical coefficient of the independent variable X_i in the j constraint; and A_j - available resource (constraint) j ;

(3) Non-negativity constraint:

$$X_i \geq 0$$

The activities in both models are independent variables and refer to different types of vegetables. Therefore, it may happen that vegetable crops from models are repeated several times, as a result of crop rotation, crop type and seeding order. The total number of independent variables in the optimisation model of vegetable production structure in greenhouses is 26, and 55 in the optimisation model of open-air vegetable production. For the purposes of this study, six basic groups of vegetable crops were defined: root vegetables, onion vegetables, tuberous vegetables, fruiting vegetables, legumes, and leafy vegetables. Certain variables appear more than once in the model and depend on the number of possible prerequisites. For example, the group of root vegetables includes some of the following independent variables: carrot wound, parsley, parsnip, beetroot, spring radish, winter radish after cucumber, autumn radish after green beans, and early chard.

The constraints of the models are related to the limiting conditions of land area (variant I - 1 ha, variant II - 10 ha), labour, mechanisation (only variant II), and of course, sowing or planting time. Accordingly, there are 41 defined constraints for variant I and 71 constraints for variant II. For example, the limitation of land capacity in the first sowing in the mathematical model is limited to 1 hectare and includes those activities, i.e. crops that are a prerequisite for the independent variables in the second sowing. The limitations of the land capacity of the second sowing must be less than or equal to the total area from the limitations of the first sowing, and the crops represented in the second sowing are at the same time independently variable prerequisites for the third sowing. A group of constraints in a mathematical model for optimizing the production structure in the field (variant II) includes the limitations of the means of mechanisation (medium tractors) and includes a period of nine months, which is assumed to represent the so-called 'work peaks' (February-October).

Given that the study relates to family farms, net income, which is also called the gross financial result, will be used as a determinant for optimization in defining the economic functions, or the objective function. Net income is the difference between the production value and direct variable costs, but it also represents coefficients of the objective function. Using these categories as determinants to maximise the objective function, the negative impact on the allocation of fixed costs of assumed activities is eliminated, which may cause us to obtain some incorrect solutions.

Based on the defined mathematical models and optimality criteria, and with the use of the software package *LINDO*, a solution relating to the optimal structure of vegetable production in greenhouses and outdoors is obtained.

In addition to this classical method of linear programming, the optimisation of vegetable production structure is also applied for both model variants, based on multiple criteria of optimality, which will, among other

things, resolve the issue of the optimal production structure based on maximum efficiency, i.e., economy of production. Maximising the production efficiency due to nonlinearities of relation was achieved by applying fractional linear programming. Farm accounting records have been a valuable source of data for this analysis; the data consists primarily of the calculations of production, as well as the norms of working hours for the observed vegetable crops, both in greenhouses and outdoors.

RESULTS AND DISCUSSION

A comparative analysis or a comparative review of the obtained results was performed, based on defined models for the optimisation of vegetable production structure in greenhouses and in the open air. The comparative analysis of the solutions is primarily related to the presentation and analysis of the obtained optimal production structure for both variants of the model, and is aimed at showing the differences between the participation of certain groups of vegetables, in terms of direct involvement of the workforce, as well as in terms of economic indicators of effectiveness and efficiency. The criterion that was used for this analysis is maximisation of net income.

Table 1 shows a comparative review of the participation or share of certain groups of vegetables for all three different sowing-planting times for both model variants, since the initial models differ in the total area intended for this type of production.

Table 1. Participation (%) of certain groups of vegetables in models for variant I and variant II

Sowing - planting		Groups of vegetable crops						Total area (ha)
		Root vegetables	Bulb vegetables	Tuber vegetables	Fruit-bearing vegetables	Leguminous vegetables	Leafy vegetables	
I	Variant I	20	20	25	/	20	15	1
II		3	2	/	51	/	44	0.67
III		4	/	/	/	/	96	0.56
Total (%)		11	9	11	16	9	44	2.23
I	Variant II	30	10	10	/	40	10	10
II		52.92	0.25	/	18.63	2.36	25.84	8.05
III		/	15.32	/	/	/	84.68	6.33
Total (%)		30	8	4	6	17	35	24.38

Source: Authors' calculations

A comparative analysis of the participation of certain vegetable groups in both of variants of the model based on the maximisation of net income reveals differences in the vegetable production structure in all three sowing-planting periods. Comparing the results in the total amount, variant II exhibits a greater share of root vegetables (by 19%) and legumes (by 8%) than variant I.

On the other hand, in variant I, the participation of other groups of vegetables is higher: by 7% in tuber vegetables, 10% for fruit vegetables, and 9% in leafy vegetables. The difference in participation of bulb vegetables is negligible, and it is only 1%.

The next part of the comparative analysis refers to the direct involvement of the workforce, where we discussed the overall working hours of employees, working hours of employees per months, and working hours of employees per hectare. For the purposes of this study, it was assumed that all operations can be performed on time, and that there is no need to hire seasonal labourers. Based on this assumption, the required number of working hours per month was finally determined by solving the model.

Table 2. Number of working hours of direct workforce by month, variant I and II variant

Months	Variant I		Months	Variant II	
	Number of working hours	%		Number of working hours	%
II	25.298416	2.04	II	788.899963	7.16
III	62.614334	5.05	III	1612.622314	14.64
IV	149.870529	12.08	IV	693.768860	6.30
V	140.282791	11.31	V	530.692505	4.82
VI	186.139969	15.00	VI	1267.591797	11.51
VII	289.276215	23.31	VII	1843.977905	16.74
VIII	223.797226	18.04	VIII	1179.676514	10.70
IX	127.730438	10.29	IX	2783.842041	25.28
X	35.800888	2.89	X	311.213348	2.83
Total	1240.810806	100	Total	11012.28525	100
Per hectare	556		Per hectare	452	

Source: Authors' calculations

The observation period for the direct involvement of the workforce is between February and October, because it is assumed that these are the months when most of the business operations are conducted, especially in the summer months, which are known to be the working peaks. That can be seen from the results in Table 2, and their comparative analysis indicated that the largest direct involvement of the workforce for both model variants is in the months of June, July, August and September. Observed

by months, it can be seen that in almost every month, variant I exhibits a greater involvement of direct labour force. The exceptions are February, March and especially in September, when this difference is particularly evident in variant II and is higher by almost 15% compared to variant I.

The total number of working hours of the direct labour force is much higher in variant II, but given that the area on which this production is performed is ten times bigger than the area defined for variant I, this result is expected. On the other hand, the direct involvement of the workforce per hectare for the model for variant I is 556 working hours, and it is 452 working hours in the model for variant II, implying that it takes a greater involvement of the workforce for vegetable production in greenhouses – 104 working hours per hectare more compared to open-air vegetable production. The comparative analysis of involved agricultural mechanisation is not possible, given that mechanisation is involved only for open-air vegetable production, while the involvement of mechanisation in greenhouses was not necessary considering the area defined by the model.

The last part of the comparative analysis refers to no less significant indicators of the results obtained by the defined optimising models. Namely, they refer to economic categories that were taken into account for defining the objective function, and indicate the economic effectiveness and economic efficiency of vegetable production for both model variants. When defining the economic function, net income was used as a determinant for the optimisation of the mentioned function. The net income is the difference between the production value and the direct variable costs. At the same time, it represents the coefficients of the optimality criterion function. The calculated net income is presented in the form of calculations for individual types of vegetables.

The primary goal of a family farm's activity is certainly to maximise the economic impact of production. In addition to the analysis of the economic effectiveness of production, an analysis of the economic efficiency of production was also carried out with the aim of demonstrating the economic efficiency of production achieved on the family farm.

In this sense, a new criterion function was defined for the set model, and the maximum value of production economy was determined by solving it. Such an analysis based on multiple optimality criteria required the application of the fractional linear programming method.

The economic effectiveness of vegetable production is presented in the form of parameters of net income, and economic efficiency is shown based on calculated economy of production. This data is shown in Table 3.

Table 3 shows that the model for optimising the vegetable production structure in greenhouses achieves higher net income per hectare than the model for optimising the open-air vegetable production structure, but achieves lower net income per working hour of the workforce, which is in line with the greater involvement of direct workforce.

On the other hand, if production efficiency is observed, then the model for optimising the vegetable production structure in greenhouses is more expressed, and its production economy is 2.25 –almost twice the size of the economy of vegetable production that is performed in the open air.

Table 3. Indicators of effectiveness and efficiency in models for variant I and variant II

Model variants	Indicators		
	Net income per hectare (EUR)	Net income per working hour (EUR)	Economy of production
Variant I	34036	27.4	2.25
Variant II	31641	28.7	1.14

Source: Authors' calculations

Analysing and comparing the financial results of open-air vegetable production and vegetable production in greenhouses, different authors also concluded that vegetable production in greenhouses is financially more cost-effective despite higher investment costs (Oplanić et al., 2013; Hadelan et al., 2015; Stamenkovska Janeska et al., 2013). The tool for the optimisation of vegetable production with an objective function of maximising the expected return proved to be functional and gives plausible results in reference to the available working capital, farm size, and production structure, as well as the technological, market and policy constraints (Stamenkovska Janeska et al., 2013).

CONCLUSIONS

Vegetable production is very important for producers, but also for the overall agricultural production. In accordance with that, the basic directions of its future sustainable development should be focused on the optimal use of the available production capacity, on increasing the volume of production, and on changing the production structure.

Unlike crop production, vegetable production achieves more favourable effects in terms of all the components of rural sustainability. The revenues generated in vegetable production are several times higher than the revenues generated from maize and wheat production, which results in better financial effects and more stable economic sustainability of farmers. The significance of vegetable production is also reflected in the great need for human labour, thus creating preconditions for new jobs in rural areas, which is the basis of social sustainability.

Based on the results obtained by a comparative analysis of the models, it can be concluded that the models differ in the optimal sowing-planting structure, in the number of independent variables or vegetables

included in the models, but also in realised net income. Also, the model for variant I requires a greater involvement of the direct workforce per hectare, and at the same time, there is no need for involvement of agricultural mechanisation. Accordingly, it is expected that the model for variant I would show the lower value of net income per working hour of the workforce compared to the model for variant II. However, when it comes to production efficiency, this model variant achieves production economy that is almost twice the size of the model for variant II.

In addition to their differences, we should point out what is common to both models. First of all, based on the obtained results, it can be claimed that the defined models are reliable, given the very wide limits of tolerance in the coefficients of the objective function. Another similarity is reflected in the fact that these models can be applied in real business conditions, or on a specific family farm. The analysis of the defined models is certainly facilitated by using modern computer techniques that enable fast and efficient data processing, thus obtaining relevant information related to the entire production process on a family farm.

Information obtained in this way is certainly a good information base for farmers, which can help them in the decision-making process. It is important for farmers to have an appropriate decision-making tool in order to determine their production structure, and make a combination that will reap the highest benefits given the resources available.

Although Serbia is generally a large vegetable producer, it still imports large quantities of off-season vegetables. With the further development of vegetable production in greenhouses, Serbia as an importer country could soon become an exporting country. Geothermal sources, mainly located in the territory of Vojvodina, Posavina, Mačva, Podunavlje, and the wider area of Central Serbia represent unused sources of energy that are necessary for this type of production. Production based on fossil fuels is not competitive due to high energy prices, but a competitive and profitable sustainable vegetable production could be achieved with the use of thermal energy sources.

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ПРОИЗВОДЊА ПОВРЊА У ЗАШТИЋЕНОМ ПРОСТОРУ У ФУНКЦИЈИ ОДРЖИВЕ ПОЉОПРИВРЕДНЕ ПРОИЗВОДЊЕ

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Резиме

У Републици Србији производња поврћа је готово у целости сконцентрисана у породичним газдинствима, која представљају најзначајнију производну јединицу, како по производним потенцијалима, тако и по оствареном обиму производње. Основни циљ овог истраживања је утврђивање структуре производње поврћа у пластеницима (модел I) и на отвореном простору (модел II, која ће омогућити да се оствари максималан финансијски резултат и да се обезбеди пуна запосленост радне снаге, уз уважавање низа биотехничких, производних, технолошких и тржишних ограничења. У суштини, у истраживању је извршено упоређивање два начина производње поврћа, односно два нивоа интензивности производње, применом математичких модела да би се на основу такве упоредне анализе могле дати

препоруке за будућу производњу. На основу упоредних резултата добијених анализом оба модела утврђено је да се модели међусобно разликују по оптималној структури сетве-садње и по броју независно променљивих величина или врста поврћа које су укључене у моделе, али и по оствареном нето приходу. Решавање дефинисаних модела извршено је применом методе линеарног програмирања, уз коришћење програмског пакета ЛИНДО, која се показала као веома успешан инструмент за оптимирање структуре производње поврћа. Компарација добијених резултата, која се у првом реду односи на приказивање и анализу добијених оптималних структура производње за обе варијанте модела, имала је за циљ да покаже међусобне разлике у погледу заступљености појединих група поврћа, у погледу ангажовања директне радне снаге и средстава механизације, као и у погледу економских показатеља ефективности и ефикасности. Критеријум који је послужио за ову анализу је максимизација нето прихода. Економска ефективност производње поврћа представљена је параметром у виду нето прихода, а економска ефикасност је приказана на основу израчунате економичности производње. Резултати до којих се дошло показују да модел за оптимизацију структуре производње поврћа у пластеницима остварује већи нето приход по једном хектару од модела за оптимизацију структуре производње поврћа на отвореном, али и да остварује и мањи нето приход по часу рада радника, што је у складу са већим ангажовањем директне радне снаге. Са друге стране, ако се посматра ефикасност производње, онда до изражаја долази модел за оптимизацију структуре производње поврћа у пластеницима, чија економичност износи 2,25 и скоро је дупло већа од економичности производње поврћа која се обавља на отвореном простору. Моделе који су дефинисани у овом истраживању, уз евентуална минимална прилагођавања, могуће је применити на конкретним случајевима у пракси, односно у породичним газдинствима која се баве производњом поврћа како би се приказала могућност додатног искоришћавања расположивих производних ресурса.

VARIANTS OF ALIENATION IN CONRAD'S *VICTORY*

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Abstract

The paper deals with various manifestations of alienation in Joseph Conrad's novel *Victory* (1915), primarily by referring to the classification put forward by the American sociologist Melvin Seeman. The introductory part provides a brief historical overview of major theoretical perspectives on alienation as a social and psychological phenomenon, as well as a discussion of Seeman's approach to it. By applying these theories to the analysis of Conrad's novel, the paper aims to demonstrate that the motif of alienation is predominant in *Victory*, denoting a condition which plagues not only the novel's protagonist, Axel Heyst, but numerous other characters as well. The same as many other authors in the period of modernism, Conrad was preoccupied with the problem of an alienated individual in the contemporary society, which makes the discussion of this motif essential for understanding his artistic vision.

Key words: Joseph Conrad, Melvin Seeman, alienation, modernism, characterisation.

ВАРИЈАНТЕ АЛИЈЕНАЦИЈЕ У КОНРАДОВОЈ *ПОБЕДИ*

Апстракт

Рад се бави манифестацијама алијенације у роману *Победа* (1915) Џозефа Конрада, првенствено се ослањајући на класификацију коју је предложио амерички социолог Мелвин Симен. Уводни део пружа кратак историјски преглед значајних теоријских ставова о алијенацији као друштвеном и психолошком феномену, као и расправу о Сименовом приступу овој теми. Потом се ове теорије примењују у анализи Конрадовог романа, са циљем да покаже да је мотив алијенације свеprisutan у *Победи*, не само као духовно стање протагонисте, Аксела Хејста, већ и као компонента у карактеризацији бројних других ликова. Као и други аутори у периоду модернизма, Конрад је заокупљен проблемом отуђеног појединца у савременом друштву, тако да је расправа о овом мотиву суштински значајна за разумевање његове уметничке визије.

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Кључне речи: Џозеф Конрад, Мелвин Симен, алијенација, модернизам, карактеризација.

INTRODUCTION

The concept of alienation has been used to refer both to a certain type of personal psychological state and to a social relationship. The initial meaning of the term, as Hamid Sarfraz argues, was established in the writings of theologians, and can be identified in the sources pertaining to a variety of religious traditions, such as Hindu, Islamic, Christian or Buddhist (Sarfraz, 1997, p. 45). In these writings, alienation is a term which can have both positive and negative connotations, depending on whether it refers to a renunciation of worldly affairs or to a sense of separation from God. As Sarfraz explains, “The main cause of alienation to most of the theologians was worldly (material and sensuous) involvement, and in order to avoid spiritual alienation, they encouraged alienation from the physical and social world” (ibid.).

A dichotomy between a desirable and undesirable form of alienation is also found in the writings of Hegel; however, his terminology pertains to a notion of the self as a social and historical creation. For Hegel, the undesirable alienation, or *Entfremdung*, occurs when an individual ceases to identify with what is perceived as the ‘objective’ world and its social, political and cultural institutions. However, such alienation can be overcome by a voluntary act of self-sacrifice for the common good, which Hegel terms *Entäusserung* (surrender or divestiture). Through such an act, the world becomes perceived as just another aspect of self-consciousness, and one establishes again a sense of unity and identification with the social system. In this manner, as Sarfraz sums it up, not only is alienation negated, but a positive result is achieved and “universal essence of man is realized” (ibid., p. 46).

In his early writings, Marx likewise posits the existence of man’s essence, which he terms *Gattungswesen* (‘species being’). In his interpretation, that which defines man’s species-life is productivity: while operating on the external nature, man simultaneously produces himself, viewing his own existence as an object he is consciously shaping through his labour. This kind of free, spontaneous and conscious life activity is for Marx a precondition to self-realisation; however, as he points out, in the capitalist society it becomes degraded and alienated from the worker. In his analysis, conducted in “Economic and Philosophic Manuscripts of 1844,” Marx argues that in capitalism, the alienated man no longer views his work as an essential life activity through which he produces his very sense of the self. On the contrary, it becomes only a means of sustaining one’s physical existence and is “shunned like the plague” once it is no longer required (2010, p. 274).

Of the more recent theories on alienation, perhaps the most empirically explored is that of Melvin Seeman. In his 1959 paper titled "On the Meaning of Alienation," he distinguishes between five of its variants: powerlessness, meaninglessness, normlessness, self-estrangement and isolation¹. While Seeman refers to Marx's concept of alienation in the paper, he does not approach the issue from the Marxist perspective. Unlike Marx, he does not see alienation as an objective condition existing in a particular type of society; instead, he approaches it "from the personal standpoint of the actor" and "the social-psychological point of view" (Seeman, 1959, p. 784). Whereas for Marx alienation objectively exists in capitalism, Seeman is not primarily concerned with the objective conditions in a modern society, but rather with an individual's subjective perception of them.

Powerlessness, the first variant of alienation in Seeman's essay, is defined by him as "the expectancy or probability held by the individual that his own behavior cannot determine the occurrence of the outcomes... he seeks" (ibid.). Seeman explains that it primarily refers to man's relation to the larger social order: an individual feels that he or she has no control over large-scale socio-political issues, such as the existing political system, industrial economy or international affairs (ibid., 785). In his later works, however, Seeman also comes to recognise a narrower approach to powerlessness, citing studies which have used his terminology to refer to research in family dynamic, or the experience of pupils in a classroom (Seeman, 1991, p. 294). Powerlessness may thus be defined as a lack of control over the events of one's social world, regardless of whether this social world comprises the entire society, or some more specific environments and communities.

The next type of alienation, *meaninglessness*, refers to "the individual's sense of understanding the events in which he is engaged" (Seeman, 1959, p. 786). This type of alienation is related to the feeling that the circumstances, or events, have become too confusing and complex to understand. It also refers to a person's lack of predictive abilities: if one does not have a clear understanding of a certain situation, it is difficult to predict what outcome one's behaviour will bring. In connection to meaninglessness, Seeman also discusses ambiguous situations, which one may try to resolve by relying on rumours (1983, p. 177).

Normlessness is the third type of alienation Seeman writes about. As he explains, this part of his theory is derived from Emile Durkheim's description of 'anomie,' denoting a situation in which "the social norms regulating individual conduct have broken down or are no longer effec-

¹ In his text "Alienation and Engagement" (1972), Seeman also establishes the sixth form, which he calls social isolation.

tive as rules for behaviour.” In such circumstances, a person is likely to disregard commonly held standards, develop instrumental and manipulative attitudes, and resort to socially unapproved behaviours in order to achieve his goals (Seeman, 1959, pp. 787–788). Seeman points out that his theory deals with ‘perceived normlessness’ – that is, with an individual’s perception that there has been a breakdown of the social order, regardless of whether this is objectively true of a given society. According to him,

The core idea in this individual-centered viewpoint is that certain people at certain times may not respect the presumed norms, may not trust others to respect them, may not perceive that there is a consensus with respect to appropriate behavior, and may be prepared to act in deviant ways to achieve given goals (e.g., to get elected, to be occupationally successful, to have one’s way).

(Seeman, 1991, p. 311)

The fourth type of alienation in Seeman’s theories is *self-estrangement*. While Seeman discusses the similar concept used by Marx (i.e., his notion of alienation from one’s ‘species being’), he expresses scepticism with regard to Marx’s essentialism, pointing out that in Marx’s writings “it is difficult to specify what the alienation is *from*... Apparently, what is being postulated here is some ideal human condition from which the individual is estranged” (Seeman, 1959, pp. 789–790). Seeman, however, embraces Marx’s idea of an intrinsically meaningful activity, a kind of work which, in a non-alienated state, would represent its own reward. Based on this premise, he defines self-estrangement, more closely, as “the degree of dependence of the given behavior upon anticipated future rewards, that is, upon rewards that lie outside the activity itself” (ibid., p. 790). Any instance in which an individual engages in activities which are divorced from affect, and not rewarding in themselves (e.g., a worker who works merely for his salary, and not because he finds the work creative, fulfilling, or meaningful in itself) would fit Seeman’s notion of self-estrangement.

Isolation, the fifth variant of alienation according to Seeman, deals with “individual’s rejection of commonly held values in the society” (1975, p. 93). The experience of this type of alienation is often accompanied by a sense of superiority; it invokes the stereotypical image of an intellectual or an artist, who shows little concern for the goals or achievements which are otherwise highly valued in his society. In his later work, Seeman changed the name of this variant to *cultural estrangement*, using two scales to measure its aspects: one concerned with general social criticism (i.e., with an individual’s approval or disapproval of certain phenomena in society); and the other, with the differences in ideas and opinions between an individual and his or her immediate social environment – such as family members, or a friend group (Seeman, 1991, p. 352).

Seeman's concept of alienation has been criticised, especially from the Marxist perspective, for its lack of consistent social criticism, its primary focus on subjective perception and on finding remedies which would only have impact on the consciousness of an individual, helping him or her adjust to the existing social order (Healy, 2020, p. 10). In spite of these objections, however, his theoretical model has proven useful and effective in understanding contemporary social phenomena. There have also been numerous instances of its application to literary analysis. In his recent discussion of Virginia Woolf's *Orlando*, for instance, Aleksandar Kordis refers to several theories on alienation, including Seeman's, in order to link different aspects of Woolf's narrative to different "narrative personae," and demonstrate how each represents an extension of the writer herself (Kordis, 2016, pp. 9–15). Likewise, Seeman's theories have been used as a framework for discussing social alienation in Eliot's "Prufrock" (Köseman, 2016, pp. 2–3), as well as the alienated condition of Kafka's literary characters (Fatehi, 2019, p. 7).

In the following sections of this paper, Seeman's theoretical model will be applied to the analysis of Joseph Conrad's well-known novel, *Victory* (1915). While critics have pointed to the alienated state of the novel's protagonist, Axel Heyst (Romanick, 1999, p. 235; Tučev, 2017, p. 229), it is also possible to discern various types of alienation as they manifest in the psychic disposition of other characters. In fact, as the following analysis will aim to demonstrate, each of Seeman's five variants of alienation is exemplified by Conrad's characters in *Victory*, or at least pertains to one phase of their development. Since the motif of alienation is one of the predominant motifs in *Victory*, its analysis through the prism of the aforementioned theories contributes significantly to understanding Conrad's artistic vision.

ALIENATION IN CONRAD'S VICTORY

Even though it takes place in the exotic and distant setting of the Malay Archipelago, Conrad's novel deals with recognisable existential issues and dilemmas which plague the modern man in general, exploring in particular the inability of its protagonist, Axel Heyst, to overcome the loss of affect, and the tragic consequences of his withdrawal from a life of action. The plot of the novel focuses on two instances when Heyst, in fact, decides to act in opposition to the nihilistic principles he has embraced, and comes to aid of two individuals: captain Morrison, whose debts he pays off, and Lena, whom he saves from a kind of indentured slavery. Neither Morrison's friendship nor Lena's love, however, succeed in altering Heyst's alienated state. The arrival of the three deadly adversaries – Jones, Ricardo and Pedro – to the island of Samburan, where Heyst lives a secluded life with Lena, likewise fails to compel him to act. Ultimately, it is Lena who devises a plan to resist the dangerous intruders, but her

courageous actions end in tragedy. In the end, Heyst can only come to realise that his detached attitude to life has been a mistake, and the manner in which he chooses to commit suicide after Lena's death – by setting a large portion of the island on fire – symbolises passion and the intense emotions which he has tried to evade throughout his life.

As this summary suggests, the theme of alienation in the novel is most strikingly connected to the character of Axel Heyst; however, other prominent characters, such as Lena, Jones, Ricardo or Morrison, are likewise affected by various form of estrangement, which may be suitably explained by referring to Seaman's classification.

Powerlessness

Powerlessness appears to be the most prevalent variant of alienation in Conrad's *Victory* and can be observed in a number of characters. The dynamic related to powerlessness is most obvious in the case of captain Morrison who, at the beginning of the novel, is in danger of losing his brig due to a minor debt. He is convinced that there is nothing he can do to alter his predicament; he feels he can neither procure the money himself, nor 'squeeze' the Malay natives who are indebted to him. These feelings correspond to Seaman's definition of powerlessness as a state of mind in which an individual does not expect that his behaviour can bring about the outcome he seeks. The desired outcome is perceived as something that can only come from outside (Seaman, 1959, p. 785). It is indeed perceived this way by Morrison, who recounts to Heyst that he "prayed like a child" to God to deliver him from this situation, even though he had previously cherished some abstract belief in self-reliance (Conrad, 1915, p. 19). When Heyst, with whom he is hardly acquainted, offers him financial aid, it appears to Morrison as though his prayers were answered. The dramatisation of Morrison's powerlessness is important for grasping his character, as well as his relationship with the sceptical, reticent Heyst, who immediately finds the other man's religious fatalism farcical, and is irritated by Morrison's emotional expressions of gratitude.

Another principal character affected by a sense of powerlessness is Lena. At the moment when Heyst meets her, she is a member of an all-woman travelling orchestra performing in a hotel in Surabaya. Lena is unhappy with her position, being harassed and mistreated both by the orchestra owner, Zangiaco, and by his sadistic wife. However, when Heyst asks her how she ended up in the orchestra, she replies, "bad luck," implying that her circumstances have been beyond her control, and cannot be influenced or changed by her actions. Her sense of powerlessness is also evident from her explanation that she cannot defend herself from the couple, nor from the advances of the hotel owner, Schomberg, because "They are too many" for her (*ibid.*, p. 64). In Lena's case, powerlessness does not refer to her relation to the large-scale world events,

which was the original meaning Seeman ascribed to this variant of alienation. Rather, it corresponds to his later observations on how powerlessness can also manifest in one's social world on a smaller scale, and in some specific environment (Seeman, 1991, p. 352). In this case, Lena's 'social world' is the orchestra, where she feels helpless and unable to affect the power dynamic.

It is important to point out, however, that Lena's conscious attitude changes after Heyst helps her escape from the orchestra and brings her to his isolated abode on the isle of Samburan. Even though Lena realises that Heyst has saved her out of pity, and not out of love, she is empowered by her newly awakened feelings for him. When the ominous Mr Jones and his two companions land on Samburan, Lena is no longer represented as powerless, but as determined to act and fight for hers and Heyst's physical survival, while also hoping that her gesture will help Heyst transcend his state of emotional and spiritual paralysis².

It is, in fact, Heyst who feels powerless against Jones, Ricardo and Pedro, the three bandits who have come to Samburan to rob and kill him and Lena. On two occasions, he explicitly refers to the feeling he is experiencing about the situation as the feeling of powerlessness. Confiding in Lena, he exclaims, "I can't protect you! I haven't the power," and later admits that, "I feel very much like a child in my ignorance, in my powerlessness, in my want of resource, in everything except in the dreadful consciousness of some evil hanging over your head – yours!" (Conrad, 1915, pp. 270–271). Similarly to Morrison, who confessed to Heyst that he "prayed like a child" when he was about to lose his ship, Heyst invokes the imagery of a helpless child to illustrate the low degree of control he believes he possesses. The notion of "some evil hanging" over his and Lena's head implies a sense of doom, or the forces of destiny against which one is defenceless. It is reminiscent of Seeman's explanation that "for the alienated man, control seems vested in external forces, powerful others, luck, or fate" (Seeman, 1972, p. 472).

Heyst's sense of powerlessness is represented in the novel as a direct consequence of his mindset and his existential choice. Living for years in self-imposed isolation and passivity has caused him to become apathetic, indecisive and reluctant to act. In his preface to the novel, Conrad sums up Heyst's psychic condition by saying he lacks the ability to "assert himself":

² Interestingly, however, some prominent Conrad scholars, such as Thomas Moser (1966, p. 126), have argued that the alienated, powerless Lena from the beginning of the narrative is more convincing as a literary character than the saintly heroine she transforms into towards the end.

...Heyst in his fine detachment had lost the habit of asserting himself. I don't mean the courage of self-assertion, either moral or physical, but the mere way of it, the trick of the thing, the readiness of mind and the turn of the hand that come without reflection and lead the man to excellence in life, in art, in crime, in virtue, and, for the matter of that, even in love.

(Conrad, 1915, p. 6)

Meaninglessness

Meaninglessness is indirectly associated with Heyst's character, in the sense that due to his aloof, hermit-like way of life he remains largely unknown even to the people who have met him in person. Although Conrad writes that "everyone in that part of the world [the Malay Archipelago] knew of him, dwelling on his little island" (Conrad, 1915, p. 11), no one truly understands Heyst, and making sense of his behaviour or predicting the course which the interactions with him would take is almost impossible. Heyst is generally known only by his external characteristics, such as his perfectly courteous manner or the gentle note of teasing in his voice. Some of his occasional remarks are turned into nicknames: thus, since he once exclaimed that he was enchanted by the southern islands, he was nicknamed "Enchanted Heyst"; on another occasion, he acquired a nickname "Hard Facts" because he stated that they were his only concern. These nicknames, however, still do not reveal anything essential about him, but merely contribute to a contradictory simulacrum which is constructed around his character.

As Seeman points out, such situations may cause a concomitant sense of ambiguity, which leads one to resort to rumours (Seeman, 1983, p. 177). A similar theory has been put forward by the Jungian psychologist Marie-Louise von Franz, who explains it by quoting a French proverb: *Les absents ont toujours tort* ('the absent ones are always to blame'). This means that a person living outside a community inevitably becomes a target of negative collective projections. If there exist warm human contact and interaction, as Von Franz argues, the ties of affection and feeling will "dissipate those clouds of projection"; but if one is always alone, there is no correcting factor which would change people's minds and show them the difference between the real person and the contents they have projected upon him (Von Franz, 1995, p. 188). A similar pattern is presented in Conrad's novel, where rumours are constantly made up about Heyst due to his enigma and isolated life. Such are the rumours spread, for instance, by the hotel owner Schomberg, who accuses Heyst of manipulating and swindling captain Morrison, and eventually causing the man's financial breakdown and death. Although Heyst knows he is not to blame for Morrison's demise, he still feels upset about the rumours. His vague sense of guilt stems from the awareness that due to his passivity and lack of affect he has not been able to reciprocate Morrison's friendship.

Normlessness

Jones and Ricardo hold a worldview which is characterised by a strong sense of normlessness. At one point, Jones tells Schomberg that he “depended on himself, as if the world were still one great, wild jungle without law,” and that the same is true of Ricardo (Conrad, 1915, p. 93). As Seeman explains, such a state of mind manifests as pessimism, cynicism and distrust, as well as the general feeling that adhering to socially approved norms will not enable one to achieve desired goals. Quite the contrary, the world is experienced as a wild, lawless place in which one no longer feels bound by conventional morality or any ethical standards of behaviour (Seeman, 1991, p. 313).

One of the ways in which Jones and Ricardo justify their lawless attitude is by referring to the concept of ‘tame’ individuals. Tameness is perceived by them as a despicable trait, suggesting the kind of people who are too timid to display their vicious nature openly, but rather act in a secretive and treacherous manner. Ricardo believes, for instance, that Heyst is one of the ‘tame’ people, whose secret manipulations have caused Morrison’s financial breakdown, illness and death, and he refers to Heyst’s alleged crime as “one of your tame tricks” (Conrad, 2015, p. 209). This attitude, harboured by Ricardo and Jones, seems to be a result of projective identification: they externalise their immorality and Machiavellianism, and project them onto the entire society. In this way, their normless behaviour appears to them justifiable against the backdrop of a ‘wild jungle’ populated by malevolent, ‘tame’ people.

The criminality displayed by these two characters is also due to their severing all the affective ties with the world. Much like Conrad’s best known protagonist, Kurtz, in the novella *Heart of Darkness* (1900), Jones has also “kicked himself loose of the earth” (Conrad, 1994, p. 95) – i.e., he no longer feels hampered by any moral restraints in his dealings with the rest of the world. Jones’s detached, dispassionate destructiveness is evident, for instance, in the scene in which he cold-heartedly murders Pedro’s brother and then forces Pedro to become his servant. Ricardo expresses the same mental disposition when he explains to Schomberg that he is completely indifferent to the hotel owner’s existence, and may decide on a whim whether to kill him or to let him live: “Now, here we sit, friendly like, and that’s all right. You aren’t in my way. But I am not friendly to you. I just don’t care. Some men do say that; but I really don’t. You are no more to me one way or another than that fly there. Just so. I’d squash you or leave you alone. I don’t care what I do” (Conrad, 1915, p. 105).

Self-estrangement

Self-estrangement is also present in the novel, in the sense which Seeman most commonly ascribes to the term, as “the individual’s engagement in activities that are not rewarding in themselves” (Seeman, 1983, p. 179). This experience of estrangement from a meaningful, productive life activity, which is closest to Marx’s notion of alienation from one’s species being, is most easily discerned in Ricardo and Lena. These two examples, however, are clearly differentiated by the fact that the theme of self-estrangement is treated ironically in Ricardo’s case, and sympathetically in connection to Lena.

In the novel’s pre-history, Ricardo used to be a mate on a ship, with a steady employment and good wages. In spite of this, however, he came to view wage labour as tantamount to selling a portion of his own self:

They give you wages as they’d fling a bone to a dog, and they expect you to be grateful. It’s worse than slavery. You don’t expect a slave that’s bought for money to be grateful. And if you sell your work--what is it but selling your own self? You’ve got so many days to live and you sell them one after another. Hey? Who can pay me enough for my life? Ay! But they throw at you your week’s money and expect you to say ‘thank you’ before you pick it up.

(Conrad, 1915, p. 116)

Ricardo’s criticism of wage labour, however, is problematised and rendered ironical by the fact that the only alternative he can find to it is teaming up with the ominous Mr Jones and becoming a criminal. This makes him similar to Donkin, a character in Conrad’s early novel *The Nigger of the Narcissus* (1897). A sailor aboard the *Narcissus* and a skilful orator, Donkin uses the rhetoric of workers’ rights and even entices a mutiny on the ship for personal gain; eventually, his ulterior motives become obvious when he steals the property of a dying crew member. As Terry Eagleton rightly observes, Donkin is in fact “a lurid caricature of a working-class agitator, sly, cowardly, blustering and indolent” (Eagleton, 2005, p. 162). Ricardo’s protest against the wage system likewise appears to be a caricature, possibly pointing to Conrad’s conservatism and dislike of socialist ideas.

An opposite example may be found in Lena, whose employment in Zangiaco’s orchestra also presents a kind of self-estrangement. Originally, playing the violin was a pleasurable and meaningful activity for Lena, who enjoyed learning the skill from her loving father. In the orchestra, however, Lena no longer experiences any fulfilment in performing, which she only does in order to survive. Heyst’s friend Davidson comments on the exploitative and unjust conditions of such working arrangements, which he regards as not much better than slavery: “Davidson

felt sorry for the eighteen lady-performers. He knew what that sort of life was like, the sordid conditions and brutal incidents of such tours led by such Zangiacomos who often were anything but musicians by profession" (Conrad, 1915, p. 37). Unlike Ricardo, however, Lena does not resort to criminality as an alternative to alienated labour, but truly manages to engage in a more meaningful life with Heyst after escaping from the orchestra, so that her existential choice is not rendered ironically.

Cultural Estrangement

Seeman's fifth form of alienation, isolation, whose name he later changed to 'cultural estrangement', refers to an individual's disagreement with the dominant values, goals and beliefs in the society, and often entails social criticism. Heyst provides a very good example of this dynamic, as he deliberately refuses to identify with the proclaimed values of his culture. An entirely different value system has been developed by Heyst's father, a renowned Swedish philosopher, and we are told that Heyst internalised it at an impressionable young age. The tenets of these teachings are that all ambition should be discarded and that one should abstain from all action, as it can only increase the sum total of the existing evil in the world. Heyst's father also refutes all the societal formulas for leading a meaningful life, instructing his son instead to assume the position of a distant observer. This nihilistic worldview is effectively summed up in a vision which comes to Heyst shortly after his father's death:

He observed that the death of that bitter contemner of life did not trouble the flow of life's stream, where men and women go by thick as dust, revolving and jostling one another like figures cut out of cork and weighted with lead just sufficiently to keep them in their proudly upright posture... After the funeral, Heyst sat alone, in the dusk, and his meditation took the form of a definite vision of the stream, of the fatuously jostling, nodding, spinning figures hurried irresistibly along... And now Heyst felt acutely that he was alone on the bank of the stream. In his pride he determined not to enter it.

(Conrad, 1915, pp. 137–138)

The stream carrying other people's lives implies their constant quest for achievement, financial gain or a distinguished social position. Heyst, on the other hand, discards the ideals of a utilitarian, money-oriented society and uses his modest inheritance to wander aimlessly for years in the Malay Archipelago.

A more problematic aspect of Heyst's philosophy, however, is that it also calls for relinquishing all attachments, including those to other human beings, which leads to this character's emotional and spiritual isolation. Even when Heyst finally decides to settle on the island of Samburan, the narrator still compares him to a "detached leaf" (*ibid.*, p. 77) be-

cause he does not connect in any meaningful way to his environment. His servant Wang and the native Alfuro tribe on the island are almost invisible to him. Heyst's essential isolation becomes evident when his character is compared to Wang's. Originally working for the Tropical Belt Coal Company, Wang is the only employee who remains on the island after the company has gone bankrupt and dissolved. Heyst and Wang appear to be equally attracted to solitariness; however, Wang successfully integrates himself in the life of the island by tilling the land and taking a wife from the Alfuro tribe. Heyst makes no such effort at integration, remaining perennially passive and absorbed in thought. He spends his days wandering the island aimlessly or leafing through his father's books. His inability to form attachments is presented in the narrative as his crucial flaw, leading to a kind of inner paralysis and the absence of affect. Heyst is neither capable of being a friend to Morrison, nor a loving partner to Lena, even in her final moments when it becomes clear that she has sacrificed her life for him. This is what makes her 'victory', to which the book owes its title, questionable and only partly real.

CONCLUSION

Alienation is one of the major preoccupations in Joseph Conrad's novel *Victory*, where it is most clearly recognised as a defining characteristic of the novel's protagonist, Axel Heyst. Heyst primarily feels alienated from the dominant values of his utilitarian, money-oriented society; on the other hand, a more problematic consequence of his alienated condition is his inability to form attachments and connect meaningfully to other people. His state of emotional and spiritual paralysis, as presented in the novel, fatally affects his friendship with Morrison and his love affair with Lena.

However, Heyst is not the only estranged character in *Victory*, and it is possible to discern various forms of alienation as they manifest in the psychic disposition of numerous other characters as well. By applying Melvin Seeman's theoretical model, these manifestations have been classified and explained. In fact, as the analysis has demonstrated, each of Seeman's five basic variants of alienation (powerlessness, meaninglessness, normlessness, self-estrangement and isolation, or cultural estrangement) is exemplified in Conrad's narrative, or at least pertains to one phase of his characters' development.

Such a striking presence of this motif in Conrad's work may suggest that, unlike Seeman, Conrad did not consider alienation in strictly subjective terms, as an individual mental state, but rather as an objective social phenomenon at the beginning of the twentieth century. This may also be cited as the reason why not only Conrad, but other prominent modernists as well, are so often preoccupied with the selfsame theme. Alienation is clearly treated as a social phenomenon, for instance, in Virgin-

ia Woolf's *Mrs Dalloway* (1925), where the mental instability of Septimus Warren Smith is represented as a reaction to the dehumanised and alienated state of the entire society. Septimus' own alienation, therefore, is both a product of social circumstances and a pithy symbol of the general condition of modern man (Hawthorn 2009, p. 115).

A similar view on the centrality of the theme of alienation in modernism is expressed by Harold Bloom: thus, in editing a collection of critical essays on alienation in literature, he includes a considerable number of texts dealing with the works of major modernist writers, such as James Joyce, Virginia Woolf, Camus, Kafka, or T. S. Eliot. While alienation appears as a term even in some of Shakespeare's plays, it is in the period of modernism, as Bloom maintains, that it acquires the meaning of "existential dread" (2009: xv). Jeremy Hawthorn likewise discerns a causal connection between alienation and modernity, stating that alienation is "a phenomenon which appears so insistently in the literature of this period that it suggests some common, fundamental reality underlying it" (2009, p. 212). The same as *Victory*, these works treat alienation not merely as a literary motif, but as a phenomenon generally recognised in social and historical reality.

ACKNOWLEDGEMENT. Prepared as a part of the project *Scientific Findings in English Linguistics and Anglo-American Literature and Culture and Teaching Applications*, conducted at the University of Niš – Faculty of Philosophy (No. 336/1-6-01).

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ВАРИЈАНТЕ АЛИЈЕНАЦИЈЕ У КОНРАДОВОЈ ПОБЕДИ

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Резиме

У раду се анализирају различите манифестације алијенације као друштвеног и психолошког феномена везаног за карактеризацију ликова у роману *Победа* Џозефа Конрада. У уводном делу дат је кратак историјски преглед теоријских ставова о алијенацији, почев од оригиналног теолошког значења овог појма, преко Хегеловог схватања и Марксове анализе, према којој је тумачење алијенације неодвојиво од друштвене критике. Највећа пажња у овом делу рада посвећена је доприносу Мелвина Симена, чији емпиријско-теоријски модел обухвата пет основних варијанти алијенације: немоћ, одсуство смисла, одсуство норми, самоотуђење и изолацију. Анализа Конрадовог романа показује да се за сваку од наведених варијанти могу наћи примери, при чему се отуђење у неким случајевима препознаје као суштинска одредница ликова, а у неким као компонента која се везује за једну фазу њиховог развоја. Увид у критичку литературу показује да је феномен алијенације у роману *Победа* најчешће довођен у везу са протагонистом, Акселом Хејстом, тако да се допринос овог рада састоји у томе што сагледава отуђено стање у ширем контексту, укључујући и бројне друге ликове у роману. Варијанта алијенације коју је Симен означио као „немоћ“ у *Победи* се манифестује као унутрашњи доживљај ликова да немају утицај на догађаје у свом окружењу, да не могу да се

избаве из неправедних услова у којима живе, или спрече насиље које им прети. „Одсуство норми“ препознајемо као субјективни осећај ликова да живе у свету безакоња и да стога ни сами не морају да се придржавају етичких начела. „Самоотуђење“, Сименов термин који је најближи Марковом појму алијенације, односи се на ликове у роману *Победа* који су приморани да зарад физичког опстанка обављају послове у којима не налазе никакву сатисфакцију. Овај мотив може у Конрадовом роману бити третиран и иронично, као у случају где један од ликова не види другу алтернативу отуђеном раду сем да се окрене злочину. Анализа ових, као и других примера, наводи на закључак да отуђење појединца представља једну од кључних преокупација у овом Конрадовом делу, при чему је аутор не третира искључиво као књижевни мотив, већ као појаву која је јасно утемељена у друштвеној и историјској стварности.

ECONOMIC ACTIVITY AND INTENSITY OF COMPETITION IN POST-SOCIALIST COUNTRIES: A PANEL ANALYSIS

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Abstract

The intensity of competition figures as an important factor in increasing economic activity. The intensification of market competition is one of the key goals of economic policy in post-socialist countries. The aim of this paper is to determine the contribution of the intensity of competition to the level of economic activity in these countries. In this article, a panel analysis is carried out on a sample of 22 post-socialist countries for the period between 2006 and 2019. The indicator of the intensity of local competition from the Global Competitiveness Index of the World Economic Forum is taken as a measure of the intensity of competition. The results of the conducted research indicate that the increase in the intensity of competition has a positive effect on economic activity, expressed by the level of gross domestic product (GDP) in the selected post-socialist countries.

Key words: gross domestic product (GDP), economic activity, intensity of competition, post-socialist countries, panel data.

ЕКОНОМСКА АКТИВНОСТ И ИНТЕНЗИТЕТ КОНКУРЕНЦИЈЕ У ПОСТСОЦИЈАЛИСТИЧКИМ ЗЕМЉАМА: ПАНЕЛ АНАЛИЗА

Апстракт

Интензитет конкуренције представља битан чинилац повећања економске активности. Интензивирање конкуренције на тржишту један је од кључних циљева економске политике постсоцијалистичких земаља. Циљ овог рада је да утврди допринос утицаја интензитета конкуренције на ниво економске активности ових земаља. У овом чланку се спроводи панел анализа на узорку од 22 постсоцијалистичке земље за период између 2006. и 2019. године. Као мера степена интензитета конкуренције узима се индикатор интензитета локалне конкуренције из Ин-

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декса глобалне конкурентности Светског економског форума. Резултати истраживања указују на то да пораст степена интензитета конкуренције позитивно утиче на економску активност, изражену нивоом бруто домаћег производа (БДП) у одабраним постсоцијалистичким земљама.

Кључне речи: бруто домаћи производ (БДП), економска активност, интензитет конкуренције, постсоцијалистичке земље, панел подаци.

INTRODUCTION

Economic theory and empirical research indicate the existence of a relationship between the intensity of competition and economic activity. According to the relevant economic literature, the intensity of competition brings about greater economic efficiency and, consequently, greater economic output (Nielsen, Rolmer, Harhoff, Andersen, & Okholm, 2013, pp. 13-14). Competition drives productivity growth by influencing companies to compete in the market place in terms of improving operational processes, costs reduction, and the production of products and services that better meet consumer needs. Namely, competition leads to allocative, productive, and dynamic efficiency (Motta, 2003, p. 50; Boheim, 2004, p. 154). Competition is especially important for post-socialist countries, as it is a key element of their reform (transition) processes (Vagliasindi, 2001, pp. 1-2). According to the transition theory, competition in these countries contributes to price reduction, excludes inefficient firms from the market, and is important for the development of innovation (Friesenbichler, Boheim, & Laster, 2014, pp. 9-10). Empirical studies provide different and often contradictory results regarding the analysed relationship between the intensity of competition and economic activity. In this context, there are three groups of authors. The first group of authors finds a positive relationship between competition and economic activity. The second group of authors does not find a statistically significant relationship, and they conclude that there is no clear relationship between competition and economic activity. Finally, the third group of authors finds a negative relationship between competition and economic activity.

The aim of this paper is to determine the relationship between the intensity of competition and economic activity in post-socialist countries. Specifically, the paper will analyse the relationship between the intensity of competition and the level of gross domestic product (GDP) on a sample of 22 observed post-socialist countries in the period between 2006 and 2019. The research is conducted using panel data regression analysis.

The article starts from the research hypothesis that the intensity of competition contributes to the level of economic activity. The intensity of competition is measured by the indicator of the intensity of local competition taken from the Global Competitiveness Index of the World Economic Forum, while economic activity is measured by the level of GDP.

In addition to its introductory part, the paper consists of three sections and a conclusion. The second part of the paper presents an overview of existing relevant scientific literature that discusses the relationship between competition and the scope of economic activity at the state level. The third section of the paper discusses the data, research methodology, and selected econometric model. The fourth part of the paper presents and discusses the obtained results of the conducted panel data analysis, while its final part derives conclusions from this analysis.

LITERATURE REVIEW

In their economic studies, many authors indicate that the correlation between the intensity of competition and the GDP level is positive. They conclude that the intensity of competition contributes to greater economic efficiency, which consequently leads to greater output. Contrary to them, other authors prove that there is no statistically significant relationship between competition and economic activity. They show through their empirical studies that the intensity of competition is not correlated with GDP. In addition, some authors claim that the intensity of competition has a negative impact on GDP due to the negative effect of intense competition on the development of innovations. In the following text, the most important authors, and their viewpoints and analyses of the problem of the relationship between the intensity of competition and economic activity are presented.

Dutz and Hayri (1999) analyse the impact of the intensity of competition on the growth of gross national product (GNP) per capita on a sample of 100 countries for the period between 1986 and 1995. The research confirms that the intensity of domestic competition has a positive effect on the growth of GNP per capita. Carlin, Fries, Schaffer and Seabright (2001) perform a regression analysis on a sample of 3300 firms in 25 transition countries to determine whether competition affects firm performance. The research indicates that competitive pressure has a significant positive impact on sales volume growth, labour productivity growth, and product development and improvement at the enterprise level.

In their research, Aghion, Harris, Howitt and Vickers (2001) confirm that competition has a positive impact on economic growth as it urges firms to innovate in order to survive on the market. They find that an increase in economic growth is accompanied by an increase in the intensity of competition, and that the maximum of economic growth is achieved at the maximum of the intensity of competition. Aghion, Bloom, Blundell, Griffith and Howitt (2005) also find that the relationship between competition and innovation can be shown as an inverted 'U' letter. Increasing the intensity of competition from a low level naturally leads to the growth of innovations and a positive impact on economic growth, up to a certain max-

imum point. However, a further growth of the intensity of competition beyond this maximum point leads to a decrease in innovation and a negative impact on economic growth. In other words, the nature of competition's impact on economic growth is determined by the level of competition. In their more recent empirical research, Aghion, Farhi and Kharroubi (2019) point to the existence of a relationship among monetary policy, economic growth and competition in the product market. The research indicates that the easing of monetary policy contributes to the growth of sector (at the firm level), and this is more so when the degree of competition in the country is greater. Aghion, Bergeaud, Boppart, Klenow and Li (2019) problematise the theory of falling economic growth and rising rents. They find that economic growth declines while the concentration of firms rises. The study shows that greater competition from efficient firms influences less efficient firms to enter markets less profitably and, therefore, to innovate less. As a result, incentives for innovation decline, reducing long-term economic growth. Aghion, Cherif and Hasanov (2021) also point to the existence of a relationship among competition, innovation, and inclusive growth that contributes to all layers of society. The study confirms that a lower intensity of competition implies less inclusive economic growth and greater inequality in income distribution.

Ahn, Duval and Sever (2020) identify the relationship between macroeconomic policy, product market competition, and economic growth. The research indicates complementarity between the deregulation of the product market, i.e. intensification of competition and counter-cyclical monetary (and fiscal) policy in encouraging investments and economic growth. Countercyclical macroeconomic policy can strengthen long-term growth, especially in conditions of intense product market competition. Hong (2022) finds a positive correlation among effective competition and competition policy, on the one hand, and the most important macroeconomic variables, such as labour productivity, economic growth, innovation, employment and reducing inequalities, on the other hand. Ultimately, in their research on the impact of competition protection policy on the economic development and by applying correlation and regression analysis on cross-sectional data, Đekić, Radivojević and Krstić (2019) conclude that the growth of the competition policy efficiency has a positive effect on the GDP trend in the observed transition countries.

Krakowski (2005) conducts a regression analysis on a sample of 101 countries and finds that there is a positive correlation between the intensity of local competition and GNP per capita. He concludes that countries with a higher GNP per capita have a higher intensity of competition. Scopelliti (2010) conducts a panel analysis of 20 OECD countries for the period between 1995 and 2005 to examine the relationship among competition, economic growth, and technological progress. Scopelliti uses the Index of Business Freedom as a measure of the domestic competition pressure. This

author also measures innovations by the number of patents, while using the growth rate of total factor productivity (TFP) as a measure of economic growth. The research results indicate that the impact of competition on economic growth depends on the distance of the country from the technological frontier. The positive impact of domestic competition on economic growth is greater for those countries that are closer to the technological frontier than for countries that are further away from the frontier.

Conversely, Monago (2013) suggests that there is no clear relationship between competition and economic development, but that more developed countries simply have a higher intensity of competition. He conducts a panel data analysis on a sample of 100 countries for the period between 2005 and 2011. Monago uses GDP per capita as a measure of economic development, while he uses an indicator of the intensity of local competition as a measure of competition. The research shows that the contribution of the intensity of competition to economic development in the case of low- and lower-middle-income countries does not reach statistical significance. In addition, it confirms a positive relationship for upper middle-income countries, while finding a negative relationship for high-income countries. Gomma (2014) conducts a panel data analysis on a sample of 115 countries for the period between 1995 and 2010, and finds a negative relationship between the intensity of competition and economic growth. He uses the Business Freedom Index as a measure of domestic competition intensity. Gomma concludes that the intensity of domestic competition leads to a decrease in GDP growth, as it has a negative impact on the development of innovations. Finally, Yussef and Zaki (2019), by investigating the nature and influence of competition policy on the economic growth of Middle Eastern and African countries, find somewhat contradictory results. While competition policy measures have a positive and statistically significant impact on the growth of GDP trend component, their impact on the GDP cyclical component is statistically insignificant.

A review of the literature and research results of various authors show that the relationship between competition and economic activity represents an open question in economics. This imposes the need for further empirical analysis of the given problem.

DATA AND METHODOLOGY

The subject of research in this paper is the relationship between the intensity of competition and economic activity in post-socialist countries. The economic activity of countries is measured by their GDP level. The intensity of competition is measured using the indicator of the intensity of local competition from the World Economic Forum Global Competitiveness Index. The value of the intensity of the local competition indicator ranges from 1 to 7, whereby 1 represents the absence of competition and 7

corresponds to the highest intensity of market competition (World Economic Forum, 2017, p. 346).

The analysis is conducted on panel data, which consists of 22 post-socialist countries for the period between 2006 and 2019. The term 'post-socialist countries' refers to all those countries that left behind the socialist system and accepted the capitalist, i.e. market economy. The following post-socialist countries are included in the panel data: Albania, Armenia, Azerbaijan, Bulgaria, Croatia, the Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Mongolia, Montenegro, Poland, Romania, the Russian Federation, Serbia, Slovakia, Slovenia, and Ukraine (Nafziger, 2005, pp. 22-23, & 742; EBRD, 2010, p. 4). The observed panel data is of the balanced type.

In the paper, panel regression analysis is used to determine the relationship between the dependent and independent variables. The dependent variable is a level of GDP (constant 2010 US\$), which figures as an indicator of economic activity. The authors decided to use the value of the logarithm of GDP to equalise large-scale data. GDP values were taken from the World Bank database (The World Bank, 2020). The employed independent variables are the following indicators: intensity of local competition (ILC), institutions (INS), infrastructure (INF), macroeconomic environment (ME), higher education and training (HET), labour market efficiency (LME), financial market development (FMD), and technological readiness (TR). The selection of independent variables was made on the basis of economic theory and research, which states that the economic activity of a country is determined by the competitiveness of its economy (World Economic Forum, 2006a, p. 3, & 5-10, 2017b, p. 1, 4, & 12). The values of the independent variables were taken from the Global Competitiveness Index database of the World Economic Forum (World Economic Forum, 2018).

It should be noted here that the Global Competitiveness Index, which was used in this analysis, is based on the twelve-pillar structure that was introduced in 2006 and was valid until the Global Competitiveness Report edition for 2017-2018, after which its calculation methodology had changed (Dudas & Cibul'a, 2019, pp. 50-51). Therefore, in this paper, a linear extrapolation of all considered variables, with the exception of the GDP variable, was performed for two years (2018 and 2019), i.e. until the outbreak of the COVID-19 virus pandemic shock, in order to ensure comparability of data and accuracy of predictions. The paper did not take into account the period after the outbreak of the pandemic, bearing in mind that many pandemic measures of state intervention affected the distortion of market competition, which would also distort the results of this analysis itself.

Taking into account all the noted variables, the research model got the following form:

$$\text{LogGDP} = \alpha_0 + \beta_1\text{ILC} + \beta_2\text{INS} + \beta_3\text{INF} + \beta_4\text{ME} + \beta_5\text{HET} + \beta_6\text{LME} + \beta_7\text{FMD} + \beta_8\text{TR} + \epsilon$$

α_0 - intercept; $\beta_1, \beta_2, \beta_3 \dots \beta_8$ - coefficients (slopes); ϵ - error term

The main research hypothesis in the paper is that the intensity of competition has a positive effect on economic activity at the state level.

The statistical program used for analysing panel data and the graphical presentation of data in this article is the R program. The following software packages were used within the R program: 'plm,' 'foreign,' 'lmtest,' 'ggplot2,' 'dplyr' and 'car.'

The descriptive statistics of all variables are presented in Table 1.

Table 1. Descriptive statistics

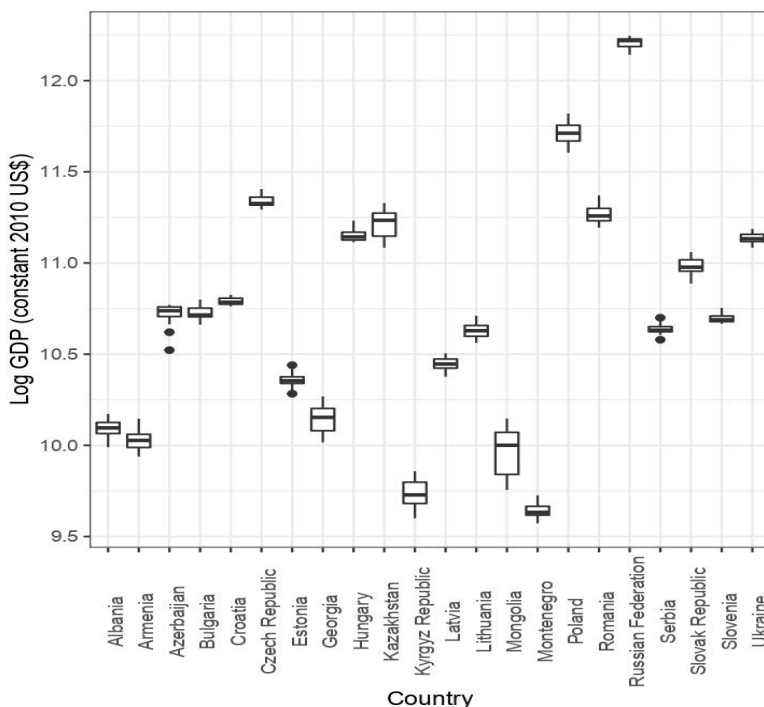
	Mean	Standard deviation	Median	Max	Min
GDP (constant 2010 US\$)	1.5909e+11	3.3904e+11	5.0229e+10	1.7624e+12	3.7344e+9
Log of GDP (constant 2010 US\$)	10.70173	0.6314511	10.70096	12.24612	9.572227
Intensity of local competition	4.723671	0.6090713	4.648524	5.832775	3.341312
Institutions	3.741536	0.4695952	3.698845	5.156973	2.743351
Infrastructure	3.932577	0.7494491	4.059439	5.475785	1.815446
Macroeconomic environment	4.853972	0.7128711	4.913580	6.4156	3.121060
Higher education and training	4.517824	0.5231843	4.542967	5.569499	2.998960
Labour market efficiency	4.384675	0.3244547	4.397622	5.154612	3.636913
Financial market development	3.933487	0.5118060	3.927632	5.096513	2.423516
Technological readiness	4.150343	0.8343914	4.193604	6.105241	1.972609

Source: Authors' calculations

The mean of GDP for 22 post-socialist countries is 1.5909e+11 dollars, the maximum value amounts to 1.7624e+12, and the minimum value is 3.7344e+9 dollars. The standard deviation of GDP amounts to 3.3904e+11. The coefficient of variation of GDP has been obtained by the following formula: 3.3904e+11/1.5909e+11= 2.131. A coefficient of variation value greater than 1 indicates a large standard deviation and data variability. The mean of the log of GDP is 10.7, the maximum value is 12.2, and the minimum value is 9.6. The standard deviation of the log of GDP is 0.631451, while the coefficient of variation amounts to 0.631451/10.70173 = 0.059. The mean of the indicator of the intensity of local competition for 22 post-socialist countries is 4.7, the maximum value is 5.8 and the mini-

maximum value is 3.3. The number of observations for each variable is 22 (countries) x 14 (time periods) = 308.

The values of the indicator of the GDP logarithm (log GDP) for all 22 post-socialist countries are presented in Graph 1. More precisely, the mean, maximum, and minimum values of this indicator are given here in the form of bar graphs for each country separately for the period between 2006 and 2019.

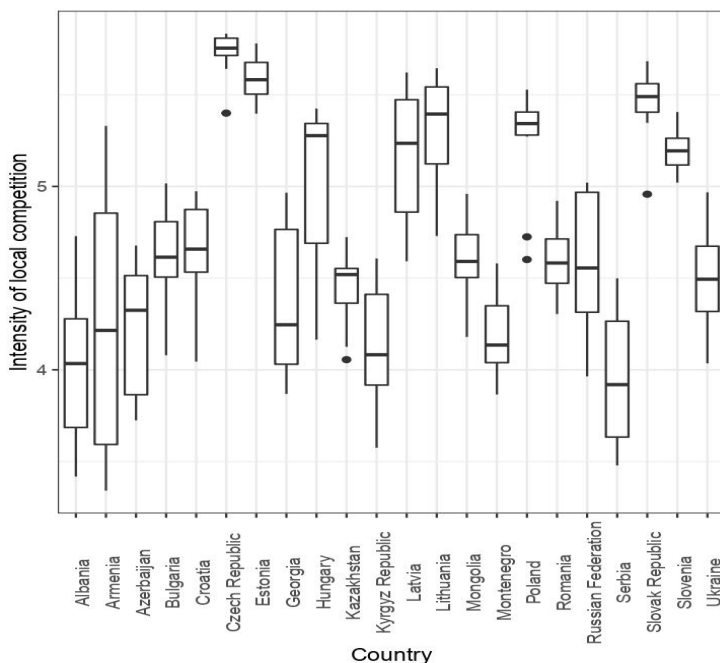


Graph 1. Log GDP (constant 2010 US\$): Mean, max, and min value

Source: Authors' contribution

An overview of log GDP values of post-socialist countries from Graph 1 shows that the observed sample consists of a heterogeneous group of countries. An overview of the log GDP indicator shows that Russia and Poland have the highest GDP values, while Kyrgyzstan and Montenegro have the lowest values. The length of the bar graphs indicates whether there was a change in the value of GDP in the observed period.

The values of the intensity of local competition indicator for all 22 post-socialist countries are presented in Graph 2. More precisely, the mean, maximum, and minimum values of this indicator are also given here in the form of bar graphs for each country separately for the period between 2006 and 2019. This indicator measures the intensity of domestic competition.



Graph 2. Intensity of local competition: Mean, max, and min value
 Source: Authors' contribution

An overview of the indicator of the intensity of local competition from Graph 2 shows that the Czech Republic, Estonia, and Slovakia have the highest values of this indicator, while Albania, Kyrgyzstan, Montenegro, and Serbia have the lowest values of the indicator. The length of the bar graphs indicates whether there was an increase in the intensity of competition during the observed period. It is noticeable that countries starting from a lower position on the graph have longer bar graphs, while countries that are in a higher position have shorter bar graphs. Longer bar graphs represent countries in transition, while shorter bar graphs represent countries that have completed the transition process and have already reached a higher level of competition intensity (United Nations, 2007a, p. 130; 2008b, p. 142; 2014c, p. 145; 2017d, p. 153).

RESULTS AND DISCUSSION

The results of the correlation analysis between the dependent variable of log GDP and the independent variables are presented in Table 2. Correlation coefficients are given in order to find out the strength and direction of the correlation relationship among these variables.

Table 2. Correlation coefficients between the dependent variable of the logarithm of GDP and the independent variables

	Log GDP (constant 2010 US\$)
Intensity of local competition	0.35
Institutions	-0.09
Infrastructure	0.38
Macroeconomic environment	0.32
Higher education and training	0.38
Labour market efficiency	-0.04
Financial market development	0.03
Technological readiness	0.27

Source: Authors' calculations

The correlation coefficients presented in Table 2 indicate that there is a satisfactory correlation level for further analysis between the variable of log GDP and the following variables: intensity of local competition, infrastructure, macroeconomic environment, higher education and training, and technological readiness. However, the correlation coefficients between the variable of log GDP and the following variables: institutions, labour market efficiency, and financial market development indicate a non-existent correlation, so these variables were excluded from the model, having no significance for further analysis. At the same time, all the remaining variables have a positive impact on the level of log GDP.

The results of the correlation analysis of independent variables are presented in the form of a correlation matrix in Table 3. The correlation matrix is given in order to determine multicollinearity in the model and thereby to eliminate errors in the regression analysis.

Table 3. Correlation matrix of independent variables

	ILC	INS	INF	ME	HET	LME	FMD	TR
ILC	1.00							
INS	0.49	1.00						
INF	0.55	0.54	1.00					
ME	0.41	0.45	0.34	1.00				
HET	0.74	0.51	0.76	0.24	1.00			
LME	0.11	0.48	0.02	0.39	-0.01	1.00		
FMD	0.48	0.51	0.15	0.46	0.22	0.29	1.00	
TR	0.68	0.57	0.82	0.41	0.78	-0.03	0.29	1.00

Legend: ILC- intensity of local competition, INS- institutions, INF- infrastructure, ME- macroeconomic environment, HET- higher education and training, LME- labour market efficiency, FMD- financial market development, and TR- technological readiness.

Source: Authors' calculations

The data presented in Table 3 indicates a high value of the correlation coefficient between the variables intensity of local competition and

higher education and training (0.74), as well as between the variables intensity of local competition and technological readiness (0.68). Furthermore, there is a high correlation coefficient in the case of the variables infrastructure and higher education and training (0.76), followed by the variables infrastructure and technological readiness (0.82). The correlation coefficient is also high in the case of the variables higher education and training and technological readiness (0.78). The value of the correlation coefficient above 0.7 between two or more independent variables indicates the presence of a multicollinearity problem (Tabachnick & Fidell, 2019, p. 77).

The results of the Variance Inflation Factor (VIF) test are presented in Table 4 in order to assess the possibility of multicollinearity in the model. On this occasion, three models were analysed, namely Model 1, Model 2, and Model 3. Model 1 includes the following variables: log GDP, ILC, INS, INF, ME, HET, LME, FMD, and TR. Model 2 includes: log GDP, ILC, INS, ME, HET, and TR, while Model 3 includes: log GDP, ILC, INF, and ME. The logic of using multiple models in the analysis of the Variance Inflation Factor is to observe the change of this parameter when certain variables are omitted from the model.

Table 4. Results of Variance Inflation Factor test

Variables	Model 1	Model 2	Model 3
Intensity of local competition	3.1532	2.7152	1.5702
Institutions	2.8905	-	-
Infrastructure	3.8726	3.6744	1.4710
Macroeconomic environment	1.7480	1.3645	1.2302
Higher education and training	4.2018	4.1056	-
Labour market efficiency	1.8550	-	-
Financial market development	1.8669	-	-
Technological readiness	4.9274	4.2744	-

Source: Authors' calculations

The results of the Variance Inflation Factor test from Table 4 indicate an increased test value in Model 1 for the variables higher education and training (4.2) and technological readiness (4.9). The values of the Variance Inflation Factor for these two variables exceed the limit of 4 points, which could imply the presence of possible multicollinearity. It is recommended to remove observed collinearity by sequentially excluding the variables with the highest value of the Variance Inflation Factor, until this indicator of all remaining variables from the model amounts to a value below the value of 3 (Zuur, Ieno, & Elphick, 2010, p. 9; O'Brien, 2007, pp. 680-681, & 684).

Based on the results of the correlation matrix and the results of the Variance Inflation Factor test, and in order to avoid the possible problem of multicollinearity, the following two variables: (a) higher education and

training and (b) technological readiness were excluded from the model. Therefore, only three variables remained in the model for further analysis: intensity of local competition, infrastructure, and macroeconomic environment (Model 3).

The existence of a unit root in the observed panel data was tested using the ‘Im, Pesaran and Shin’ (‘IPS’) test. The ‘IPS’ test was chosen due to the length of the time series, $T = 13$, as well as the fact that it has generally been shown to be more powerful than the ‘Levin, Lin and Chu’ (‘LLC’) test and Fisher’s tests (Barbieri, 2006, p. 10, & 52). The results of the conducted ‘IPS’ test are shown in Table 5, in which $I(0)$ represents the regular values of the variables (at the level) and $I(1)$ represents the values of the variables that were transformed by the first differentiation. The obtained p-values of the test are presented in parentheses. When evaluating the results of the unit root test, we are guided by the following rules: If the obtained p-value is not statistically significant, then the time series is not stationary. If the p-value is less than 0.05 at the significance level of $\alpha=0.05$, then we can reject the assumption that the time series has a unit root.

Table 5. Panel unit root test results

	I(0)		I(1)	
	Intercepts	Intercepts and trend	Intercepts	Intercepts and trend
Log GDP	5.315	-6.5655	-8.282	-13.133
(constant 2010 US\$)	(1)	(2.592e-11)	(< 2.2e-16)	(< 2.2e-16)
Intensity of local competition	-3.7574 (8.585e-05)	-9.2366 (< 2.2e-16)	-11.95 (< 2.2e-16)	-8.8979 (< 2.2e-16)
Infrastructure	-0.9652 (0.1672)	-6.5348 (3.185e-11)	-10.718 (< 2.2e-16)	-11.997 (< 2.2e-16)
Macroeconomic environment	-3.2003 (6.865e-05)	-7.0254 (1.067e-12)	-14.113 (< 2.2e-16)	-12.214 (< 2.2e-16)

Source: Authors’ calculations; (Kleiber, Lupi, 2011, p. 8)

The results of the unit root test show that the log GDP variable at the level is non-stationary, with a p-value of 1 with the included intercept, indicating that the series has a unit root. The log GDP variable after the first differentiation obtained a p-value less than 2.2e-16 with the included intercept and a p-value less than 2.2e-16 with the included intercept and trend. These values were significantly less than 0.05 in both cases, so the log GDP variable became stationary after its first differentiation. The variables of intensity of local competition, and macroeconomic environment had a p-value less than 0.05, both at the level $I(0)$ and also in the case of order of integration $I(1)$, indicating that they did not have unit roots. Finally, the infrastructure variable had a p-value of 0.1672 with the included intercept and it is not stationary, while it got a p-value less than 2.2e-16 after its first differentiation, which made it stationary.

The results of the panel regression analysis and corresponding summary statistics are presented in Table 6. The authors decided to conduct the panel regression analysis on the variables that were transformed by first differentiation, considering the obtained results of the unit root test. The number of observations in the panel has decreased, and now it amounts to $22 \times 13 = 286$, since the time series was shortened by one unite due to the transformation by first differencing. Table 6 presents a comparative overview of the panel regression analysis results of the Pooled OLS model, the Fixed effects model (LSDV), and the Random effects model. The authors decided to choose the model with dummy variables (LSDV) as a type of fixed effects model. The reason for choosing this model is that it gives the

Table 6. Panel regression analysis results of the Pooled OLS model, the Model with fixed effects (LSDV), and the Model with random effects

	Pooled OLS	LSDV	Random effects
Intercept			
▪ Coefficient	0.0123671	0.0154977	0.0125237
▪ Std. Error	0.0012698	0.0050728	0.0015982
▪ t value	9.7393	3.055	7.8364
▪ Pr(> t)	< 2.2e-16 ***	0.00248 **	4.638e-15 ***
Intensity of local competition	0.0143560	0.0122497	0.0133720
▪ Coefficient	0.0052354	0.0051857	0.0051210
▪ Std. Error	2.7421	2.362	2.6112
▪ t value	0.006495 **	0.01890 *	0.009023 **
▪ Pr(> t)			
Infrastructure			
▪ Coefficient	-0.0043103	-0.0068358	-0.0054850
▪ Std. Error	0.0058503	0.0058279	0.0057379
▪ t value	-0.7368	-1.173	-0.9559
▪ Pr(> t)	0.461884	0.24189	0.339107
Macroeconomic environment	0.0128906	0.0130992	0.0129876
▪ Coefficient	0.0028430	0.0027976	0.0027724
▪ Std. Error	4.5342	4.682	4.6846
▪ t value	8.559e-06 ***	4.57e-06 ***	2.805e-06 ***
▪ Pr(> t)			
R-squared	0.09961	0.218	0.10369
Adjusted R-squared	0.09003	0.1461	0.09415
Total Sum of Squares	0.10555	-	0.099328
Residual Sum of Squares	0.09504	0.082542	0.089029
Degrees of freedom	282	261	261
F - statistics	10.3991	3.032	Chisq: 32.6239
p- value	1.642e-06	6.574e-06	3.866e-07
θ (theta)	-	-	0.2809

Significant codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Source: Authors' calculations; (Torres-Reyna, 2010, pp. 8-14)

correct values of the F-statistic (model), the coefficient of determination (R^2), the adjusted coefficient of determination R^2 , and the total sum of squares, as opposed to the ‘Within’ model which generates incorrect values of these parameters (Park, 2011, p. 10 & 32). More detailed results of the panel LSDV regression in the case of dummy variables (countries) are not shown in Table 6 due to the present limitation on the length of the article and overcrowding, i.e. the need for their transparency.

The results of the tests for the evaluation and selection between the Pooled OLS model, the Fixed-effects model and the Random-effects model are presented in Table 7. The following tests were performed: the F test, the Breusch-Pagan LM test, and the Hausman test.

Table 7. The results of the model estimation tests

F test	Breusch-Pagan LM test	Hausman test
F = 1.8819	chisq = 5.779	chisq = 2.3938
p = 0.0125	p = 0.01622	p = 0.4948

Source: Authors’ calculations; (Torres-Reyna, 2010, p. 12, 16 & 19)

The result of the F test indicates whether the choice of Pooled OLS model is better than the Fixed-effects model (LSDV). If the p-value is less than 0.05, then the fixed effects model performs better. In our case, the F test records a p-value of 0.0125, so it is concluded that the panel data regression analysis by the Fixed-effects model (LSDV) represents the right choice.

The result of the Breusch-Pagan LM test tells us whether the Pooled OLS model is better than the Random effects model. The Random effects model is superior if the p-value is less than 0.05. In our case, the Breusch-Pagan LM test records a probability p-value of 0.01622, so it was concluded that the panel data regression analysis by the random effects model was a preferred choice over the Pooled OLS regression analysis.

Finally, the result of the conducted Hausman test indicate whether the Fixed-effects model is better to use than the Random-effects model. The Fixed effects model is preferred if the p-value is less than 0.05; otherwise, the Random effects model is used (Croissant, Millo, 2008, p. 22). In our case, the Hausman test recorded a p-value of 0.4948, so the regression analysis by the Random effects model appeared to be the right choice. Based on the results of the previous three conducted tests (the F test, the Breusch-Pagan LM test, and the Hausman test), the authors opted for the panel data regression analysis using the Random effects model.

The results of the tests for the assessment of serial correlation in the chosen panel model with random effects are presented in Table 8. For this purpose, the following tests were employed: the Durbin-Watson test and the Breusch-Godfrey/Wooldridge test.

Table 8. Serial correlation in the selected panel model

Durbin-Watson test	Breusch-Godfrey/Wooldridge test
DW = 1.6344	chisq = 66.896
p = 0.0009572	p = 2.976e-09

Source: Authors' calculations; (Torres-Reyna, 2010, p. 21)

The results of the Durbin-Watson and Breusch-Godfrey/Wooldridge tests indicate that there was a serial correlation in the model, as the p-value in both tests was less than 0.05. (Croissant, Millo, 2008, p. 26).

Due to the determined serial correlation in the observed model, the paper approached the evaluation of the selected Random effects panel data model with the correction of the obtained coefficients by Newey-West robust standard errors. These results are presented in Table 9. Otherwise, the method of correcting the coefficients with Newey-West standard errors is a robust procedure that takes into account the observed autocorrelation in the model with great precision, among other things (Gujarati, 2012, p. 108).

Table 9. Results of the chosen Randon effects panel model corrected by 'Newey-West' standard error

	Coefficient	Std. Error	t value	Pr(> t)
Intercept	0.0125237	0.0015726	7.9636	4.132e-14***
Intensity of local competition	0.0133720	0.0057807	2.3132	0.0214305 *
Infrastructure	-0.0054850	0.0053815	-1.0192	0.3089606
Macroeconomic environment	0.0129876	0.0033988	3.8212	0.0001634***

Source: Authors' calculations

The outcomes of the conducted statistical procedure indicate that the local competition intensity coefficient, even after the correction of its standard error with the Newey-West technique, remained relevant and statistically significant.

The results of the selected random effects panel regression analysis from Table 6 and their corrections from Table 9 show that an increase in the intensity of local competition had a positive and statistically significant effect on the GDP in the observed post-socialist countries in the period between 2006 and 2019. The value of the β -coefficient of the intensity of local competition indicator amounts to 0.01337, with its p-value of 0.009, while its p-value got the value of 0.0214 after the procedure of its standard error correction, which was still lower than 0.05. In other words, the β -coefficient of the intensity of local competition is positive and statistically significant. Here we also draw attention to the fact that the value of the β -coefficient of 0.01337 was expressed in relation to the logarithmic value of GDP, while the values of GDP were logarithmised with the base of 10. Therefore, the true relationship between the intensity of competition and GDP is calculated by the following formula: $(10^\beta - 1) \times 100 = (10^{0.01337} - 1)$

$\times 100 = 3.126$. This further means that an increase in the intensity of local competition by one unit leads to an increase in GDP of 3.13%. The coefficient of determination (R^2) amounts to 0.1036, which means that the model explains 10.36% of the variation in log GDP for the observed countries. On the other hand, the statistically significant value of its F-statistic (Chisq = 32.6239 and p-value = 3.866e-07) indicates that all predictors jointly contributed to the GDP growth of the observed countries, as well as that the selected Random effects panel data model is relevant.

CONCLUSION

The paper investigates the impact of the intensity of competition on the economic activity of post-socialist countries using panel data analysis. The authors decided to use the indicator of the intensity of local competition from the Global Competitiveness Index of the World Economic Forum as a measure of the intensity of competition. The level of GDP is observed as a measure of economic activity, which is used in the model in the form of log GDP. The choice of variables in the model was made based on the relationship between economic activity and the competitiveness of economy. The random effects regression panel analysis was carried out on data that has been transformed by first differencing.

The results of the conducted panel regression analysis unequivocally confirm the basic research hypothesis of the paper, which states that the intensity of domestic competition has a positive effect on economic activity, also confirming the findings of many other cited authors (Nielsen et al., 2013; Friesenbichler et al., 2014; Dutz & Hayri, 1999; Aghion et al., 2001; Aghion et al., 2019; Aghion et al., 2021; Ahn et al., 2020; Krakowski, 2005; Scopelliti, 2010; Hong, 2022; Đekić et al., 2019). Coefficient- β for the indicator of the intensity of local competition amounts to 0.01337 in relation to the logarithmic value of GDP. The relationship between the intensity of competition and log GDP is positive and statistically significant at the 5% level. Furthermore, the calculation determined that each additional unit of competition intensity lead to an increase in the level of GDP by 3.13% in the observed post-socialist countries in the period between 2006 and 2019.

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ЕКОНОМСКА АКТИВНОСТ И ИНТЕНЗИТЕТ КОНКУРЕНЦИЈЕ У ПОСТСОЦИЈАЛИСТИЧКИМ ЗЕМЉАМА: ПАНЕЛ АНАЛИЗА

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Резиме

Конкуренција представља надметање између предузећа на тржишту које за последицу има смањење цена и побољшање квалитета производа. Предузећа под притиском конкуренције теже да смање своје трошкове и да унапреде производне процесе, односно да повећају продуктивност. На нивоу државе, конкуренција подстиче сва предузећа на националном тржишту да повећају продуктивност, а то има за резултат повећање нивоа домаћег производа.

Емпиријска истраживања иду у прилог постојања корелације између конкуренције и економске активности. Резултати истраживања бројних аутора налазе, пре свега, позитивну везу између интензитета конкуренције, с једне стране, и економских величина као што су БДП, БДП по становнику, раст БДП, БНП, БНП по становнику, и продуктивност рада, с друге стране. Један број аутора, пак, налази негативну везу између конкуренције и БДП или чак и одсуство икакве везе између ових величина. Обично су то истраживања конкуренције, иновација и економског раста у којима веће вредности интензитета конкуренције доводе до смањења иновирања, и последично до смањења економске активности. Свакако, област утицаја конкуренције на економску активност представља отворено поље за разматрање и анализу.

Аутори у раду врше анализу панел података на узорку од 22 постсоцијалистичке земље за период између 2006. и 2019. године. Аутори су се одлучили за анализу постсоцијалистичких земаља управо због важности конкуренције као фактора за подстицање њихове економске активности. Ова група земља обухвата земље у транзицији и посттранзиционе земље. Карактеристично за све ове постсоцијалистичке земље јесте спровођење интензивних реформи у области политике заштите конкуренције. Наиме, ради се о земљама у којима је дошло до значајног повећања интензитета конкуренције у посматраном периоду.

Регресиона панел анализа спроводи се ради утврђивања односа између интензитета конкуренције и економске активности у постсоцијалистичким земљама. Овом приликом је као мера конкуренције узет индикатор интензитета локалне конкуренције из Индекса глобалне конкурентности Светског економског форума, док је као мера економске активности узет ниво бруто домаћег производа (БДП). Регресиона панел анализа је спроведена на здруженом Pooled OLS моделу, LSDV моделу са фиксним ефектима и моделу са случајним ефектима. Након спровођења дијагностике модела, изабран је модел са случајним ефектима. Резултати регресионе анализе одабраног модела случајних ефеката указују на то да повећање интензитета локалне конкуренције за један поен доводи до повећања БДП-а за 3,13%. Важно је напоменути да су подаци у моделу трансформисани првим диференцирањем.

BANKING SERVICE QUALITY, SATISFACTION, AND LOYALTY PERCEIVED BY STUDENTS: A HIERARCHICAL APPROACH

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Abstract

Recommendations to consider service quality as a hierarchical construct formed by its dimensions (and not reflected through them) have existed in academic literature for more than two decades, and arose simultaneously with the conclusion that even in the most valued marketing journals, the problem of model misspecification was present to a large extent. The consequences of not respecting those recommendations are studies' inappropriate conclusions. Nevertheless, even nowadays, there is a need to embrace that approach in service quality research more broadly. In the case of banking service quality research valued from the students' perspective, according to the authors' knowledge, there are no other authors that implemented the recommended approach. In conditions of intense competition, banks should pay more attention to clients' needs. Domestic banks have a number of offers for the student market segment, taking into account its potential effect on the banks' future profitability. Therefore, this research considered banking service quality dimensions, satisfaction, and loyalty regarding the student population. Data was collected by using a questionnaire; the convenience sample consisted of 301 students from the University of Novi Sad. After performing all necessary analyses regarding constructs involved in the model, the main effects were examined in the SmartPLS4 software. Among quality dimensions, the largest contribution to banking service quality was recorded for responsiveness, followed by empathy. Banking service quality positively and significantly affected satisfaction, which, on the other hand, positively affected loyalty. Moreover, the indirect effect of banking service quality on loyalty was significant as well.

Key words: banking service quality, satisfaction, loyalty, students, hierarchical model.

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КВАЛИТЕТ БАНКАРСКИХ УСЛУГА, САТИСФАКЦИЈА И ЛОЈАЛНОСТ ПЕРЦИПИРАНИ ОД СТРАНЕ СТУДЕНАТА: ХИЈЕРАРХИЈСКИ ПРИСТУП

Апстракт

Препоруке да се квалитет услуге посматра као хијерархијски конструкт који формирају његове димензије (а не рефлектује се кроз њих) постоје у академској литератури више од две деценије и настале су истовремено са закључком да је проблем погрешне спецификације модела био присутан у великој мери чак и у најцењенијим маркетиншким часописима. Последице непоштовања ових препорука су неприкладни закључци студија. Ипак, чак и данас постоји потреба да се у истраживању квалитета услуга тај приступ шире прихвати. Према сазнањима аутора, у случају истраживања квалитета банкарских услуга вреднованог из перспективе студената, нема других аутора који су применили препоручени приступ. У условима интензивне конкуренције, банке треба да обрате више пажње на потребе клијената. Домаће банке имају низ понуда за сегмент тржишта који чине студенти, узимајући у обзир њихов потенцијални утицај на будућу профитабилност банака. У складу са тим, у раду су размотрене димензије квалитета банкарских услуга, задовољство и лојалност студената. Подаци су прикупљени коришћењем упитника; пригодан узорак чинио је 301 студент са Универзитета у Новом Саду. Након спровођења свих потребних анализа у вези са конструктима укљученим у модел, главни ефекти су испитани у софтверу SmartPLS4. Међу димензијама нижег нивоа, највећи допринос квалитету банкарских услуга забележен је код одговорности, а затим код емпатије. Квалитет банкарских услуга позитивно и значајно утиче на задовољство, које, с друге стране позитивно утиче на лојалност. Такође, утврђен је и значајан индиректан утицај квалитета банкарских услуга на лојалност.

Кључне речи: квалитет банкарских услуга, сатисфакција, лојалност, студенти, хијерархијски модел.

INTRODUCTION

When it comes to service quality, an important aspect is its operationalisation. Hereby, relying only on first-order subdimensions as separate latent constructs instead of using hierarchical models, as well as misspecifications in the selection of the construct mode – reflective or formative – can lead to biased results (Becker, Klein & Wetzels, 2012; Crocetta et al., 2021; Hallak, Assaker & El-Haddad, 2017; Roy, Tarafdar, Ragu-Nathan & Marsillac, 2012). In many studies, banking service quality was usually examined in regard to the application of the SERVQUAL approach, with its five main dimensions (Lau, Cheung, Lam & Chu, 2013): reliability (bank's ability to realise the promised service in an accurate and dependable way), responsiveness (willingness related to helping bank customers and providing well-timed services), empathy (dedicating individualised attention to bank's customers in order to understand their needs), assurance (courtesy and knowledge of bank's employees, as well as their ability to build customers' confidence) and tangibility (the ap-

pearance of the bank's premises, equipment, and employees). Contrary to research in which those dimensions were examined as separate constructs, in this research, service quality was operationalised as a hierarchical higher-order construct formed by the mentioned dimensions.

In order to get deeper insights, besides service quality, our analysis included customer satisfaction and loyalty. Customer satisfaction can be defined as "a personal assessment that is greatly affected by customer expectations" (Hussien & Aziz, 2013, p. 560). It can be related to the emotion that customers feel when comparing their experiences (Arcand, PromTep, Brun & Rajaobelina, 2017), i.e. when comparing actual and expected performance (Raza, Umer, Qureshi & Dahri, 2020). On the other hand, customer loyalty, as "an integral part of business" (Kostadinović & Stanković, 2021, p. 334), can be associated with "a strong, trusting relationship between the customer and the business" (Raza et al. 2020, p. 1448). Its measures usually include customers' recommendations, continuing to use services of the same company, and considering the company as the first choice (Ganguli & Roy, 2011).

Relations between service quality, satisfaction, and loyalty have been investigated in regard to the student population, which represents a potentially attractive segment to banks. Although students do not usually purchase a wide range of financial products throughout their studies, after graduation, they are expected to use a broad spectrum of bank services during their lifecycle (Tank & Tyler, 2005). In addition, students are more likely to obtain well-paid professional jobs contrary to those with lower educational levels (Narteh, 2013), and are used to dynamic living, mobility, and new technology (Ozretic-Dosen & Zizak, 2015), because of which the focus on this market segment may bring higher profits in the future.

According to the authors' knowledge, this is the first research in which the banking service quality, modelled as a hierarchical reflective-formative construct, was analysed in relation to students' satisfaction and loyalty. After discussing modelling service quality, presenting similar studies, and setting hypotheses in the literature review section, the model was developed in the methodological part of the paper. Research results are followed by the discussion and concluding remarks.

LITERATURE REVIEW

Banking Service Quality – Students' Aspect

Due to the intense competition in the retail banking industry, neglecting one or more market segments may have negative consequences on bank performance, especially in the long run. The segment that is interesting for many banks refers to the student population. Following academic literature, there are two main reasons for its attractiveness. First,

the student market can be considered a viable business venture (Mokhlis, Hasan & Yaakop, 2014, p. 361), as it is expected of them to become high-paid individuals (Lewis, Orledge & Mitchell, 1994) who may use various bank's products and services (Pass, 2006). Thus, the attraction of students at the early phase of their economic life cycle and maintaining relations with them are primarily motivated by reaping profits in the upcoming years (Narteh, 2013). The second reason relates to the application of mobile and internet banking, bearing in mind that according to Ganguli & Roy (2011, p. 173) students belong to the group of heavy users of banking technology. This is of special importance, taking into account the technological changes followed by the increase in the digital market.

The first banking service that students usually use relates to current accounts. Since a number of them leaves home to study and is forced to manage their own financial affairs (Lewis et al., 1994), this type of service may be of great help. In addition to online buying and paying bills, the current account is necessary for receiving different types of payments. Among them are student scholarships and loans, where according to the Ministry of Education of the Republic of Serbia (2023), there were 8.282 student scholarships and 6.798 student loans in the academic 2022/23 year.

Many banks in Serbia dedicated attention to young people and students by creating special service packages (Table 1), whereby most of those services are free of charge. The results in the table are provided by visiting the websites of the banks operating in Serbia.

Adapting the offer to students represents an important step in their retention, because of which banks should strive to improve the quality of their services. Banking service quality is the subject of analysis in many studies. When it comes to students, its evaluation was dominantly based on the application of the SERVQUAL approach (Bhengu & Naidoo, 2016; Bond & Hsu, 2011; Mokhlis et al., 2014; Ozretic-Dosen & Zizak, 2015; Pass, 2006). There is also research where banking service quality was analysed in relation to student satisfaction. Reddy and Karim (2014) investigated the quality of banking services, taking into account its six dimensions (tangibility, reliability, responsiveness, empathy, accessibility, and assurance), whereby the subject of the analysis was their impact on the students' satisfaction with those services; significant effects were detected in the case of reliability, empathy and assurance. The research of Hin, Wei, Bohari and Adam (2011) paid attention to the effects of service quality and bank selection criteria on students' satisfaction with a banking institution; their results revealed that both independent variables significantly and positively influenced the students' satisfaction.

Table 1. Student service packages in Serbia

Bank name	Segment	Services	Source
Postal Savings Bank	Students aged between 18-27	<ul style="list-style-type: none"> ▪ Current Account ▪ Debit Cards (Dinacard and Mastercard) ▪ Internet Banking ▪ Mobile Banking ▪ SMS notification ▪ Standing orders 	https://www.posted.co.rs/stanovnistvo/platni-racuni/studentски-racun.html
Erste Bank	Young people and students aged between 16-27	<ul style="list-style-type: none"> ▪ Current Account ▪ Debit Card (Dinacard) ▪ NetBanking ▪ mBanking ▪ Mastercard Youth card 	https://www.erstebank.rs/sr/Stanovnistvo/racun/Omladinski-tekuci-racun
OTP Bank	Unemployed young people and students aged between 18-27	<ul style="list-style-type: none"> ▪ Current Account (Dinar and EUR) ▪ Mastercard – Fluo card ▪ M-bank application ▪ Google pay and Apple pay ▪ ATMs EUR withdrawal ▪ Discounts 	https://www.otpbank.rs/stanovnistvo/fluo-ponuda-za-mlade/
ProCredit Bank	Young people aged between 18-26	<ul style="list-style-type: none"> ▪ Current Account (Dinar and EUR) ▪ Debit Cards (Dinacard and Mastercard) ▪ Google pay and Apple pay ▪ eBanking ▪ mBanking ▪ FlexSave (Dinar and EUR) ▪ Term deposit ▪ Standing orders 	https://www.procreditbank.rs/stanovnistvo/racun/racun-za-mlade
UniCredit Bank	Students up to 26	<ul style="list-style-type: none"> ▪ Current Account ▪ mBanking ▪ Mastercard debit card ▪ Google pay and Apple pay ▪ Special discounts 	https://studenti.unicreditbank.rs/korisne-informacije.20.html#tekuci-racun
Raiffeisen Bank	Unemployed young people aged between 18-26	<ul style="list-style-type: none"> ▪ Current Account ▪ Mastercard debit card ▪ eBanking and mBanking ▪ Mobile cash ▪ Apple Pay and RaiPay 	https://www.raiffeisenbank.rs/racun/paket-racun-mladi/
NLB bank	Young people aged between 18-27	<ul style="list-style-type: none"> ▪ Current Account ▪ mBanking, eBanking and SMS service ▪ Debit card and Prepaid card ▪ Foreign currency account ▪ Favorable exchange rate 	https://www.nlbkb.rs/stanovnistvo/racun/start-set-tekuci-racun

In addition to satisfaction, banking service quality was examined in relation to loyalty. Yilmaz, Ari, and Gürbüz (2018) analysed relationships between SERVQUAL dimensions (based on students' perceptions of banking services) and satisfaction, as well as the relationship between students' satisfaction and loyalty. In accordance with their findings, customer satisfaction was positively affected by assurance, reliability, tangibility, and accessibility, while it positively affected loyalty. In the study conducted by Narteh (2013), students' bank loyalty was investigated in the context of service quality, bank image, student satisfaction, and electronic banking. Similar to previous research, a positive and significant relationship was recorded between satisfaction with banking services and students' bank loyalty. Bank image and electronic banking were also found to be significant determinants of loyalty. However, the effect of the students' perceived service quality on bank loyalty was insignificant. In the case of internet banking service quality, Raza et al. (2020) used a model which included six e-service quality factors (site organisation, reliability, responsiveness, user-friendliness, personal need, and efficiency), electronic customer satisfaction, and electronic customer loyalty on a sample of students who belong to different higher education institutions. All factors positively influenced customers' satisfaction, which, on the other hand, positively influenced electronic customer loyalty. The research of Nguyen et al. (2020), which was focused on students and paid employees, included e-banking service quality, customer satisfaction, switching costs, and customer loyalty. Besides positive correlations between service quality factors (empathy, responsiveness, reliability, tangibility, and service capacity) and customer satisfaction, customer loyalty was positively correlated with customer satisfaction and switching costs. By analysing data obtained from undergraduate students, Ganguli and Roy (2011) identified four dimensions of service quality in technology-based banking (technology usage easiness and reliability, customer service, technology convenience, and technology security and information quality), and investigated their effects on customer satisfaction and loyalty. Technology usage easiness and reliability and customer service positively affected both customer satisfaction and loyalty, whereby the latter was positively affected by technology convenience. Moreover, a positive relation was detected between customer satisfaction and customer loyalty.

Following the previously mentioned studies, this research examined relations between banking service quality, students' satisfaction, and loyalty. Taking into account that a great volume of research in different sectors, including those associated with banking, direct relations between service quality, satisfaction, and loyalty were positive (Alkhouli, 2018; Darmawan, Mardikaningsih & Hadi, 2017; Manik, 2019), we set the following hypotheses.

H₁: Banking service quality directly, positively, and significantly affects students' satisfaction;

H₂: Students' satisfaction directly, positively, and significantly affects students' loyalty;

H₃: Banking service quality directly, positively, and significantly affects students' loyalty.

Additionally, as banking service quality can have an indirect effect on loyalty through satisfaction (Bloemer, de Ruyter & Peeters, 1998; Caruana, 2002; Karatepe, 2011; Minh & Huu, 2016; Sasono et al., 2021; Sleimia, Musleh & Qubbaj, 2020; Supriyanto, Wiyono, & Burhanuddin, 2021), we set a fourth hypothesis.

H₄: Banking service quality indirectly, positively, and significantly affects students' loyalty.

All variables (service quality, satisfaction, and loyalty), as well as the hypothesised relations among them are presented in Figure 1.

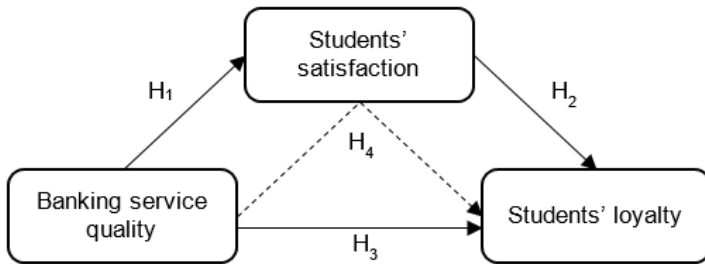


Figure 1. Conceptual model

Service Quality Modelling

The problem in service quality modelling identified in previous research leads theoreticians to the conclusion that considering “the majority of studies,” “one has to wonder how much we really know about the concept of service quality,” since the “methodological foundation that service quality was built upon is starting to show cracks and as a community we need to re-examine the concept of service quality along with our assumptions and inferences” (Collier & Bienstock, 2009, p. 292). In this part of the paper, we will deal with all the complexities of the issue leading to such a dramatic rethinking of the concept.

Generally, for examining complex phenomena and their relationships, one of the useful tools that can be applied refers to partial least squares path modelling (PLS-PM) (Crocetta, et al., 2021). PLS-PM has already been used in many management and marketing disciplines, such as organisation management, strategic management, international marketing, etc. (Cheah, Ting, Ramayah, Memon, Cham & Ciavolino, 2019).

An important question when implementing this approach concerns the operationalisation of multidimensional constructs. Hereby, two important topics arise. The first refers to the need to implement the hierarchical model. The second is related to the type of hierarchical model that should be used.

When it comes to the recommendation to use hierarchical models, there is a number of explanations suggesting the use of those models instead of models that include only lower-order dimensions. Hereby, the reduction of model complexity and better theoretical parsimony are some of them (Becker, Klein & Wetzels, 2012). In addition, in the context of service quality, relying only on first-order subdimensions as separate latent constructs can lead to empirical bias and create measurement errors (Hallak, Assaker & El-Haddad, 2017). In addition, Blut (2016) defines e-service quality even as a third-order factor model.

To previous explanations, we can add a purely theoretical observation leading to the need to model service quality as a higher-order construct. Namely, the theoretical foundation for such modelling can be found in means-end-chain theory (Parasuraman, Zeithalm, & Malhotra, 2005). Hereby, in this specific case, when developing the measure of electronic service quality, the authors (among whom are those who also developed widely used SERVQUAL) point out that concrete ques represent technical aspects that affect the evaluation of quality, perceptual attributes, and dimensions present the level at which the evaluation of quality happens, while higher-order abstractions correspond to consequences of quality evaluation, including overall service quality.

After opting for a hierarchical (higher-order) approach, the second important moment for researchers relates to the selection of the construct mode – reflective or formative (Crocetta et al., 2021). There are four basic types they can choose from: reflective-reflective, reflective-formative, formative-reflective, and formative-formative (Cheah et al., 2019). Hereby, it should be noted that wrong modelling leads to a misspecification error which influences the structural paths within the measurement model, and may result in erroneous path coefficients (Roy et al., 2012).

Bearing in mind that service quality is usually measured through several dimensions (mostly including SERVQUAL dimensions – reliability, responsiveness, assurance, empathy, and tangibles), it should be modelled as a higher-order construct. In this regard, following specific criteria and recommendations (Jarvis, Mackenzie & Podsakoff, 2003; Parasuraman et al., 2005), banking service quality should be presented as a formative second-order construct, which is determined by its reflective first-order constructs (dimensions). This can additionally be supported by relying on theoretical explanation provided by Jarvis et al. (2003, p. 203). We can firstly consider the relationship between individual items and corresponding dimensions. Hereby, those items can be understood as manifes-

tations of their dimensions; changes in items are not expected to cause changes in dimensions, although the opposite is expected; furthermore, the items belonging to individual dimensions have similar content, and dropping one of them should not alter the conceptual domain of the dimension; and, finally, a change in one of the items can be associated with changes in another, and they have the same antecedents and consequences. Therefore, it can be seen that the relationship of dimensions and their corresponding items is reflective. Then, we can consider the relationship between individual quality dimensions and quality as a higher-order construct. In contrast to the previous explanation, the dimensions are actually defining characteristics of the higher-order quality construct and changes in them should cause changes in the construct, but not the opposite; the dimensions neither have similar content, nor share a common theme; dropping one of them would alter the conceptual domain of the construct; additionally, they do not necessarily covary, nor have the same antecedents and consequences. Therefore, it can be concluded that the relation between quality dimensions and higher-order quality construct is formative.

According to Crocetta et al. (2021, p. 727), “formative models are becoming a standard tool in socio-economic research, particularly in the fields of causal modelling and multidimensional evaluation”, whereas, in the case of service quality measurement, formative perspective was already implemented in some research (e.g. Collier & Bienstock, 2009; Blut, 2016; Liu, Fu, Chao & Li, 2019; Pestovic, Milicevic, Djokic, and Djokic, 2021). Although the problem of model misspecification was identified in the majority of the research from the top marketing journals two decades ago (Jarvis et al., 2003), as were recommendations to consider service quality as a formative construct (Rossiter, 2002; Parasuraman et al., 2005; Collier & Bienstock, 2006), “academic researchers have been so mechanic in the application of reflective indicators in model specification” (Collier & Bienstock, 2009, p. 292) up until today.

To previous considerations, we can add the problems arising when the model is not correctly specified. Jarvis et al. (2003, p. 216) demonstrate in Monte Carlo simulation that “measurement model misspecification severely biases structural parameter estimates and can lead to inappropriate conclusions about hypothesised relationships between constructs”. In addition, Collier and Bienstock (2009) showed that modelling service quality as reflective instead of a formative construct resulted in a severe diminishing of the significance of a concrete dimension of quality, with all problems arising for managerial implications.

Having all previous problems in mind, we can present the treatment of the construct of banking service quality in previous research. It is presented in Table 2.

Table 2. Modelling service quality in previous research

Source	Construct is multidimensional	Construct is hierarchical	Construct is reflective-formative
Bhengu & Naidoo (2016)	No	-	-
Bond & Hsu (2011)	No	-	-
Hin et al. (2011)	No	-	-
Narteh (2013)	No	-	-
Mokhlis et al. (2014)	Yes	No	-
Ozretic-Dosen & Zizak (2015)	Yes	No	-
Pass (2006)	Yes	No	-
Reddy & Karim (2014)	Yes	No	-
Yilmaz et al. (2018)	Yes	No	-
Raza et al. (2020)	Yes	No	-
Nguyen et al. (2020)	Yes	No	-
Ganguli & Roy (2011)	Yes	No	-

The results provided in the table suggest that previous research in the field either does not consider banking service quality as a multidimensional construct or does not consider it as a hierarchical construct. Having that as a starting point, the methodology used in this research can be considered as the main contribution of our paper.

METHODOLOGY

In this research conducted in 2022, we used a convenience sample of 301 students from the University of Novi Sad. Hereby, 61.13% of them were female, and the average age was 21.3. Data was collected by using a questionnaire, based on the studies of Lau et al. (2013) – for measuring banking service quality, and Yilmaz et al. (2018) – for measuring satisfaction and loyalty. Hereby, 15 statements were used for assessing banking service quality - 3 statements for each of the five dimensions (assurance (A1, A2, A3), empathy (E1, E2, and E3), reliability (Rel1, Rel2, and Rel3), responsiveness (Res1, Res2, and Res3), and tangibles (T1, T2, and T3)), and 3 statements each for satisfaction (S1, S2, and S3) and loyalty (L1, L2, and L3). All statements were rated on a scale from 1 to 7, where 1 refers to ‘strongly disagree’ and 7 to ‘strongly agree.’ The questionnaire was distributed through the Google Forms online platform and in physical form.

When modelling banking service quality as a hierarchical reflective-formative construct, the repeated indicator approach (Becker et al., 2012) was applied; it assumed the reuse of the manifest indicators of the first-order constructs for the second-order construct (van Riel, Henseler, Kemény & Sasovova, 2017), i.e. banking service quality was specified by using all 15 indicators of the underlying service quality dimensions. In

addition to variables related to quality, the model included students' satisfaction and loyalty, which were specified as reflective constructs (Figure 2). While relations between manifest variables and their respective latent variables are described by the measurement (or an outer) model, relations between latent variables are described by the structural model (Crocetta et al., 2021). The data was processed in 2023, by using the SmartPLS 4 software.

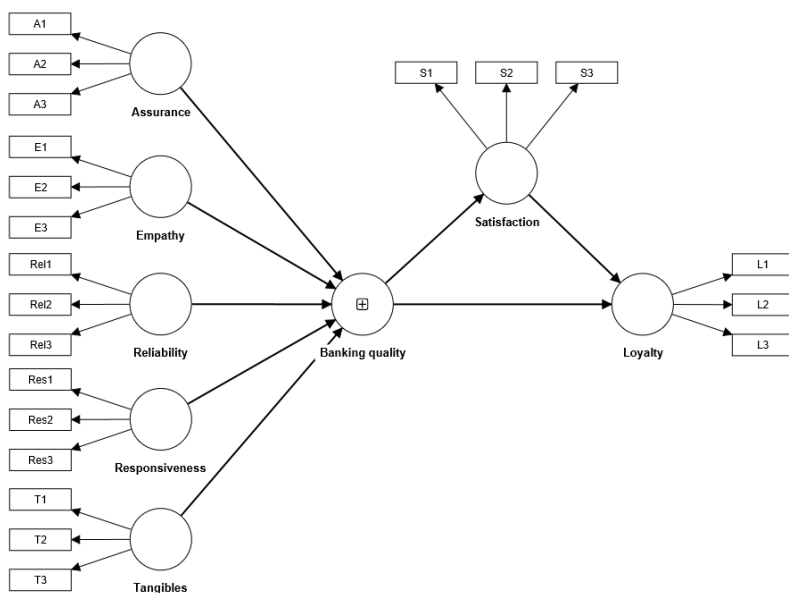


Figure 2. Hierarchical model - Banking service quality

RESULTS

Measurement Model

In accordance with certain studies (Hair, Sarstedt, Ringle & Mena, 2012; Hair, Ringle & Sarstedt, 2013), the following criteria were tested for all first-order reflective contracts (five quality dimensions, satisfaction, and loyalty): indicator reliability (outer loadings), composite reliability (CR), average variance extracted (AVE), and discriminant validity (the Fornell-Larcker criterion). All of them were satisfactory except for discriminant validity; the problem occurred in relation to the reliability dimension. Therefore, we excluded the indicator Rel3 from further analysis, as it was highly correlated with indicators from other dimensions. After those changes, the model was tested again.

Table 3. Reflective constructs - Outer loadings, AVE, and CR

Reflective constructs	Outer Ldgs.	AVE	CR
<i>Assurance</i>		0.766	0.907
The bank can provide customers the services as promised.	0.871		
The bank can provide accurate service to customers.	0.875		
The bank can honour their commitments.	0.880		
<i>Empathy</i>		0.772	0.910
Staffs are knowledgeable to solve customers' problems.	0.848		
Staffs have the enthusiasm to understand customer needs.	0.893		
Staffs consider customer needs in the first place.	0.894		
<i>Reliability</i>		0.754	0.860
Customers can feel a sense of secure during the transaction process.	0.853		
Banking service can increase customers' confident and trust in quality services.	0.883		
<i>Responsiveness</i>		0.805	0.925
Staffs can provide customers precise personal services.	0.884		
Staffs can understand customers' needs.	0.905		
Staffs are helpful to customers.	0.903		
<i>Tangibles</i>		0.693	0.871
The equipment of the bank is sufficient and visible for customers' usage.	0.815		
The bank facilities and designs make customers feel comfortable.	0.840		
Sufficient staffs are available to provide customers banking services.	0.843		
<i>Satisfaction</i>		0.890	0.960
I am satisfied to work with the bank.	0.942		
I am happy to use the services of the bank.	0.942		
In general, I have a good and positive impression about the bank.	0.946		
<i>Loyalty</i>		0.820	0.932
I will prioritise the bank when I have to choose a bank of the same type for my future banking needs.	0.927		
I will continue to prefer the products and services of the bank.	0.870		
Despite some minor issues, I will continue to prefer the bank.	0.919		

As shown in Table 3, all criteria were satisfactory; outer loading for each indicator was higher than 0.70, while AVE and CR values for each construct were higher than 0.50 and 0.70, respectively. Moreover, satisfactory results have been obtained in relation to the Fornell-Larcker criterion, where the square root of the constructs' AVE (for each reflective construct) was higher than correlations with other constructs (Table 4).

Table 4. Reflective constructs - Fornell-Larcker criterion

	Ass.	Emp.	Loy.	Rel.	Res.	Sat.	Tan.
Assurance	0.875						
Empathy	0.681	0.878					
Loyalty	0.575	0.665	0.906				
Reliability	0.787	0.699	0.540	0.869			
Responsiveness	0.718	0.835	0.740	0.681	0.897		
Satisfaction	0.661	0.727	0.904	0.610	0.805	0.943	
Tangibles	0.636	0.718	0.656	0.590	0.820	0.721	0.833

When it comes to the higher-order construct, the assessment included path coefficients between banking service quality and its lower-order dimensions, as well as the check of multicollinearity. Significant and positive path coefficients, and satisfactory VIF values (according to Kennedy, 2008) demonstrated no issues in the case of banking service quality as a higher-order construct.

Structural Model

In our structural model, there were three R² values; because of the use of the repeated indicator approach, for banking service quality, it equalled 1, while it was 0.657 and 0.817 for satisfaction and loyalty, respectively. Figure 3 presents path coefficients and their p-values.

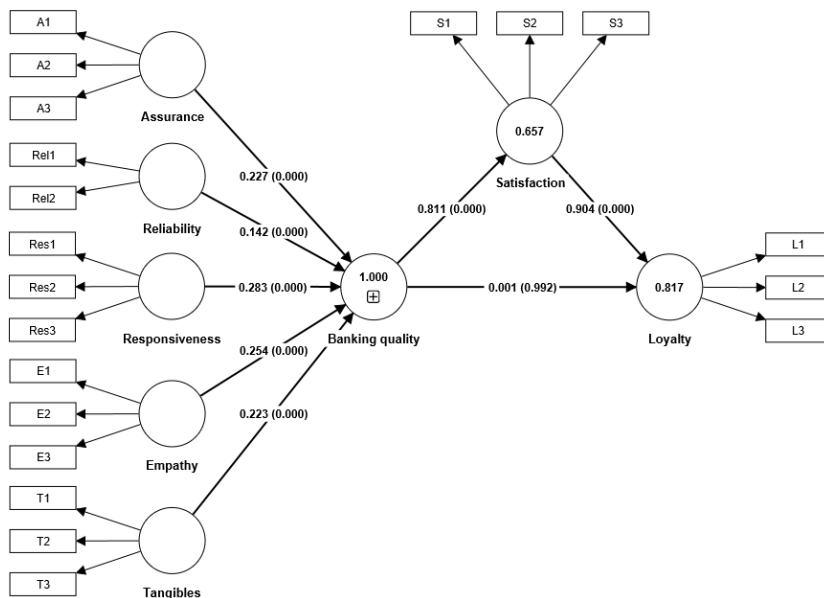


Figure 3. Path coefficients

As previously mentioned, all path coefficients related to quality dimensions were positive and significant, whereby the largest contribution to banking service quality was recorded for responsiveness (0.283), followed by empathy (0.254). Positive and significant path coefficients were detected between banking service quality and satisfaction (0.811), as well as between satisfaction and loyalty (0.904); on the other hand, the path coefficient between banking service quality and loyalty was positive (0.001), but non-significant, as p-value was higher than 0.05. However, banking service quality had a significant and positive indirect effect (0.732) on loyalty, indicating full mediation (Nitzl, Roldan & Cepeda, 2016) through satisfaction (Table 5).

Table 5. Direct and indirect effects

Relations	Total effects	Direct effects	Indirect effects
Banking quality -> Loyalty	0.733*	0.001	0.732*
Banking quality -> Satisfaction	0.811*	0.811*	-
Satisfaction -> Loyalty	0.904*	0.904*	-

In accordance with the obtained results, hypotheses H_1 , H_2 , and H_4 are confirmed, which was not the case with hypothesis H_3 .

DISCUSSION AND CONCLUSION

The paper was focused on banking service quality and its relations with satisfaction and loyalty taking into account the student population. This market segment was considered having in mind its potential effect on banks' future profitability. Besides examining those relations, the significance of the research is reflected in modelling banking service quality, which was presented as a hierarchical (higher-order) construct. Hereby, in accordance with certain suggestions, it was specified as a second-order construct determined (formed) by five first-order reflective dimensions (responsiveness, reliability, assurance, tangibles, and empathy).

Among those dimensions, responsiveness and empathy made the largest contribution to banking service quality. This is in line with the research of Karatepe, Yavas and Babakus (2005), who identified interaction quality (dimension partly overlapping with responsiveness) and empathy as the two main dimensions of service quality. In addition, Kant and Jaiswal (2017) singled out responsiveness as the perceived service quality dimension with the largest impact on customer satisfaction. The obtained result only emphasised the role of bank staff in providing services; their helpfulness and effort to understand customers' needs are of special importance when establishing relations with students. Therefore, certain

courses and training could be held with the aim of preparing bank staff to comprehend customer wants and adequately respond to them. According to Karatepe (2011, p. 294), these training programs could include “case studies centering on interpersonal skills, product knowledge, empowerment, and effective customer complaint management.” Moreover, banks should try to individualise attention to customers, by applying customer lifecycle management (CLM). Accordingly, Crain and Main (2022) have suggested several activities, among which are relevant content sharing (through web sites and social media platforms), provision of adequate support options during and immediately after customer decision, and personalisation of customers’ experience by informing them about offers that may be in their sphere of interest. Having in mind the large base of customers, different customer lifecycle software can be used for this purpose (Crain and Main, 2022).

Following the research findings, the increase in banking service quality directly leads to an increase in customer satisfaction. A positive relationship between service quality (or its dimensions) and satisfaction in the banking sector was also found in a number of other studies (Abbasi, Khan & Rashid, 2011; Ali & Raza, 2017; Kaura & Datta, 2012; Supriyanto et al., 2021). Banking service quality significantly and positively affected students’ loyalty, but only indirectly (through satisfaction), which can be supported by the study of Supriyanto et al. (2021). Indriastuti, Putri, Robiansyah and Anwar (2022) also found that, in the context of internet banking, e-service quality significantly affected loyalty only through customer satisfaction, while its direct effect was non-significant. When it comes to the student population, the non-significant relation between perceived service quality and bank loyalty was identified in the research of Narteh (2013, p. 163), implying that “satisfaction with services alone is not enough to guarantee loyalty to banks by the student customers.” Full mediation effect of satisfaction on the relationship between service quality and customer loyalty was confirmed in other sectors as well, such as telecommunication (Solimun & Fernandes, 2018) and insurance (Fachmi, Modding, Kamase & Damis, 2020). In addition, similar to Narteh (2013) and Yilmaz et al. (2018), our research has shown that loyalty was directly and positively affected by student satisfaction. As mentioned in the research of Helgesen (2006), customer loyalty is usually perceived as the main consequence of customer satisfaction.

Having in mind the positive influence of customer satisfaction and/or loyalty on profitability in banking and some other sectors (Eklof, Podkorytova & Malova, 2020; Helgesen, 2006; Pooser & Browne, 2018; Yeung & Ennew, 2001), banks need to improve the quality of their services; They should constantly monitor students and offer them delightful services, well above their expectations; hereby, every service failure should be followed by an apology and proper compensation (Narteh,

2013). Once again it should be stressed that all the above-presented results, as well as recommendations, gain significance in the context of the modelling applied in this research, which is also the main theoretical contribution of this paper. Namely, only considering service quality as higher higher-order construct (Blut, 2016; Hallak et al., 2017; Parasuraman et al., 2005), as well as presenting the relations of quality dimensions and overall quality as formative (Rossiter, 2002; Parasuramana et al., 2005; Collier & Bienstock, 2006), which has never been employed by some other authors in the field of banking service quality perceived by students measurement before, leads to neither inappropriate conclusions (Jarvis et al., 2003) nor to incorrect managerial implications (Collier & Bienstock, 2009).

In order to gain a deeper insight into this topic, future research may include additional variables associated with students (for example gender, income, or other socio-demographic characteristics) that could be used as moderators. In addition, banking quality, satisfaction, and loyalty could be analysed in a broader context, including some banks' financial performances. Finally, some other segments, like employed young people, can be of special importance to be the focus of future research.

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КВАЛИТЕТ БАНКАРСКИХ УСЛУГА, САТИСФАКЦИЈА И ЛОЈАЛНОСТ ПЕРЦИПИРАНИ ОД СТРАНЕ СТУДЕНАТА: ХИЈЕРАРХИЈСКИ ПРИСТУП

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Резиме

Због активне улогу у различитим привредним секторима, а полазећи и од важности у погледу економског развоја, анализа банкарског пословања је једна од тема која привлачи пажњу већег броја аутора. Имајући у виду промене на банкарском тржишту и интензивне конкурентске односе међу његовим учесницима, придобијање нових и задржавање постојећих клијената представља предуслов остваривања позитивних пословних резултата. Међу различитим сегментима, пажњу би требало посветити и студентима, који због својих друштвених и економских специфичности, као клијенти могу утицати на будућу профитабилност банака.

Анализа квалитета банкарских услуга може представљати основу за предузимање различитих активности у циљу задовољавања потреба клијената. У складу са тим њено мерење је неопходно када су у питању пословне банке. Водећи се сличним студијама у овом раду је истражен квалитет банкарских услуга перципиран од стране студената, као и његов однос са сатисфакцијом и лојалношћу. При томе, квалитет банкарских услуга је моделован као хијерархијски (рефлексивно-формативни) конструкт, детерминисан са пет димензија нижег нивоа: поузданост, сигурност, одговорност, емпатија и опипљиви елементи. Према сазнањима аутора, ово је прво истраживање у којем је квалитет банкарских услуга, моделиран на овај начин, анализиран у односу на задовољство и лојалност студената. За ту сврху примењен је приступ понављајућих индикатора. Узорак су чинили студенти Универзитета у Новом Саду, а прикупљени подаци су обрађени помоћу софтвера

SmartPLS 4. Након тестирања поузданости и валидности рефлексивних конструкта (димензија нижег нивоа, сатисфакције и лојалности), уследила је евалуација квалитета банкарских услуга, као конструкта вишег нивоа. По испуњењу основних критеријума, анализиран је квалитет банкарских услуга, као и односи између поменутог конструкта, сатисфакције и лојалности. Резултати су показали да у најзначајније димензије квалитета банкарских услуга спадају одговорност и емпатија. Такође, потврђено је постојање позитивног и статистички значајног утицаја квалитета на сатисфакцију и сатисфакције на лојалност. Када је у питању однос између квалитета банкарских услуга и лојалности, забележен је само статистички значајан индиректни утицај, што указује на пуно посредовање конструкта сатисфакција.



Добијени резултати указују да би у циљу побољшања конкурентске позиције на тржишту, банке требало да унапреде квалитет својих услуга, са посебним освртом на обуку и усавршавање запослених.

THE DEVELOPMENT OF MUSICAL HEARING IN SOLFEGGIO TEACHING THROUGH A MULTIMODAL TREATMENT OF ATONAL AND EXTENDED-TONAL MUSIC BY SERBIAN COMPOSERS

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Abstract

The subject of this paper is the development of musical hearing of university students through solfeggio learning, in which selected passages from the extended-tonal and atonal music of Serbian composers are treated multimodally (by activating several sensory modalities). The development of musical hearing was carried out through the process of literal parallelism in the perception and performance of extended-tonal and atonal music of Serbian composers. The research method is a pedagogical experiment in parallel groups – the testing technique was applied. The aim of the research is to examine the influence of literal parallelism in auditory perception and performance on improving musical hearing in third-year university students. The authors conclude that the application of literal parallelism in auditory perception and performance in third-year students' solfeggio instructions only partially contributed to the development of hearing. We believe that the reasons for this result lie in the limitations of the applied experimental research – the experimental program itself was conducted in classes for only half an hour on a weekly basis. Also, an appropriate sample of students is, although common for smaller faculties such as art ones, too small to draw general conclusions. With all of the above in mind, the authors believe that the application of literal parallelism should be introduced during earlier levels of education, as they are indispensable for working on the complex content of extended-tonal and atonal music.

Key words: solfeggio, aural skills, multimodal approach, pedagogical experiment, Serbian composers.

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РАЗВОЈ МУЗИЧКОГ СЛУХА У НАСТАВИ СОЛФЕЋА КРОЗ МУЛТИМОДАЛНИ ТРЕТМАН АТОНАЛНЕ И ПРОШИРЕНО-ТОНАЛНЕ МУЗИКЕ СРПСКИХ КОМПОЗИТОРА

Апстракт

Предмет овог рада јесте развој музичког слуха студената кроз универзитетску наставу солфеђа у којој се одабрани одломци из проширено-тоналне и атоналне музике српских композитора третирају мултимодално (активацијом више чулних модалитета). Развој музичког слуха вршен је кроз процес дословног паралелизма у опажању и извођењу проширено-тоналне и атоналне музике српских композитора. Као метод истраживања примењен је педагошки експеримент у паралелним групама – техника тестирања. Циљ истраживања је испитивање утицаја дословног паралелизма у слушном опажању и извођењу на побољшање музичког слуха код студената треће године студија. Аутори закључују да је примена дословног паралелизма у слушном опажању и извођењу у настави са студентима треће године само делимично допринела развоју слуха. Сматрамо да разлози за овакав резултат леже и у ограничењима примењеног експерименталног истраживања, будући да је истраживач за експериментални програм имао на располагању само пола сата на недељном нивоу. Такође пригодни узорак студентата је, иако уобичајен за мање факултете попут уметничких, малобројан да би се донели генерални закључци. Са свим реченим у вези, аутори сматрају да би примену дословног паралелизма требало укључити у раније нивое образовања, јер су они неопходни за рад на сложеним садржајима проширено-тоналне и атоналне музике.

Кључне речи: солфеђо, слушне вештине, мултимодални приступ, педагошки експеримент, српски композитори.

INTRODUCTION

The successful interpretation of extended tonality and atonal musical works created during the 20th and the 21st centuries is by default one of the main tasks of the entirety of university-level music education, and a precondition of professional competence. The fact is, however, that music without a tonal support, and especially composed by Serbian composers, is not given proper attention. This phenomenon was also noticed by Dragana Stojanović Novičić (2010, p. 138), who named it an exaggerated use of “tonal narrative” in solfeggio teaching. The consequences of the above mentioned may be the following: (1) insufficient competence of musicians to perform works created in the 20th and the 21st centuries; (2) failure to reach the ultimate range of musical hearing development; and (3) insufficient motivation to perform these works on stage.

Composers and musicologists who support atonality believe that the problem is not in music, and that we are in need of a new perception (Masnikosa, 1998, p. 30). Being aware that the accurate perception of atonal combinations (including serial ones) is almost impossible, these music experts suggest that, instead of focusing on the perception of pitch-

es (or micro-structure), one should attempt to perceive macro-structure, i.e., musical form, chords, and so on (Aguila, 2005). This kind of perception should be nurtured in all school subjects; however, since solfeggio (aural skills) is the only subject oriented toward developing auditory sensitivity, it is unacceptable to give up on accurate intonation and rhythmical precision in performance and perception.

It is proven that the abilities to perceive music develop under the influence of unconsciously internalised sounds of a culture, and a genetically-based and culturally-shaped mechanism of expectation (Nikšić, 2021). The authors Cvetković and Đurđanović explain cultural experience through noting the fact that the audience was exposed to, for example, Mozart, rather than Stockhausen (Cvetković & Đurđanović, 2014, p. 329).

There are numerous factors that make atonal music more difficult to perceive, understand, memorise, and reproduce compared to tonal music. Speaking about the characteristics of listening to contemporary music, Jelena Cvetković (2015) states, “A listener who was musically raised on the basis of traditional art music, when listening to new music, feels a kind of disintegration of sound flow, which prevents him from understanding the musical connections within composition” (Cvetković, 2015, p. 153). Most of our musical experience is based on tonality. In addition, atonality is characterised by a lack of tonal statics and kinetics (primarily functional), as well as the polarity of consonance–dissonance. Composers often pay attention to the music piece (Lehman, Sloboda & Woody, 2012, p. 256) and follow their own very rich musical language, ignoring the fact that such a language is felt in a positive sense and understood by a small number of listeners. During cognitive processing, the central issue is the mechanism of grouping, which is carried out according to the laws of gestalt, and atonal achievements are predominantly not in accordance with them. As a logical consequence of such predispositions to the cognitive processing of atonality, there is a negative reaction – negative feelings, including frustration and anxiety. Cvetković (2015) offers the possibility of interpreting this phenomenon in light of Festinger’s theory of cognitive dissonance (Festinger, 1957, according to Cvetković, 2015), according to which everyone strives towards the consistency of their opinions, attitudes, and behaviour. Thus, if the two phenomena are psychologically inconsistent, there is a feeling of unpleasantness and the impression of inconsistency (Cvetković, 2015, p. 154).

Research shows that both musicians and non-musicians express a lack of emotional reactions to atonal music compared to tonal music. Feelings are inevitably reflected in the learning process, and the atonal context affects the increase of insecurity when performing on the instrument. It has been proven that atonality creates distraction or confusion while playing *a prima vista* (Udtaisuk, 2005, p. 89). An accurate premonition for otherwise unexpected musical turns is built through gaining ex-

perience; individuals manage to adapt to “contraaesthetics” and adopt such a complex musical language (Huron, 2006, p. 333), far from the diatonic foundations of children’s, folklore, and popular music, and even the largest part of art creation. Therefore, to arouse, but also to maintain the interest of most students in the music of these characteristics is not an easy task. The correct way to do this is repeated exposure. More precisely, with repeated exposure to previously perhaps unpleasant musical content, with the help of the (new) existing experience, new types of expectations develop, and the next encounter, even with atonal music, is perceived as less stressful (Huron, 2006, p. 292). At the same time, expectations that get confirmed in the future as accurate become accelerated by the motor reactions that are the foundation of every kind of performance (Huron, 2006, p. 357).

The concept of *literal parallelism in the perception and performance of the extended-tonal and atonal music of Serbian composers* is based on repetition and directed against forgetting, i.e., the disappearance of sound information in memory. In it, musical information is treated bilaterally, or multiple times, primarily through reproduction, but also through a deeper cognitive processing of sound information. Literal parallelism is based on a multimodal approach in teaching solfeggio (Beočanin, 2017). As solfeggio represents a complex set of skills whose acquisition depends on practice, literal parallelism in perception and performance is a specific form of guided practice, since it basically contains repetition. Literal parallelism implies an approach based on vocal performance from sheet music, and the auditory perception (recognition) of the same musical passages, possibly with a subsequent instrumental performance in order to further substantiate sound impressions. This approach contains certain specifics that deviate from the usual teaching procedures. Contrary to the practice of singing and perceiving similar or related sound phenomena at one time (thereby consolidating the sound impression in consciousness), literal parallelism provides for the singing of a particular example in one class, and then its renewal by dictation in the next, as well as in later classes. The renewal, except through dictation, is carried out by encouraging students to play previously processed melodies on their chosen instrument or a piano, as well as to create improvisations of those same examples themselves. This concept, therefore, exceeds ordinary repetition. Repetition alone makes learning exclusively reproductive and stereotypical. This is especially inconvenient in the case of music of extended tonality, and especially atonality, as it is very difficult to mentally process. Repetition, but with a new combination of elements, proves to be a better option. Therefore, here we propose that the reproductive basis of literal parallelism gets supplemented with productive exercises, done in class and/or in the form of homework. Productive exercises are a kind of counterpart to traditional preparatory instructional exercises since they

arise after the first stage of mastering the original melody. These exercises – student improvisations – should affirm active learning and contribute to the additional determination of the pitch relations regardless of the rhythmisation within the original melodies. This simple principle combines different teaching procedures and does not exist in the available methodical suggestions in the form used in this research. However, we can say that it is most similar to the methods of two American authors – Herder (1977) and Friedmann (1990).

RESEARCH METHODOLOGY

The aim of the research is to examine the influence of literal parallelism in auditory perception and performance on the improvement of musical hearing in third-year university students. In accordance with the aim set in this way, the following tasks are defined: (1) choose suitable teaching content – excerpts from extended-tonal and atonal Serbian musical works, which would represent indicators for an independent variable (literal parallelism in perception and performance); (2) form a corresponding sample in university classes and divide it into parallel groups; (3) organise work with an experimental group and work with a control group, in which the experimental factor will not act; and (4) construct an initial and final test to examine the level of melodic hearing (accuracy in the auditory perception of atonal melodies) and harmonic hearing (accuracy in the perception of non-tertian based chords).

Hypothesis. Literal parallelism through the perception and performance of extended-tonal and atonal music of Serbian composers contributes not only to the enrichment of the fund of stable musical-auditory representations but also to the improvement of musical hearing expressed through accuracy in perceiving unknown instructive musical content. *The research method* is a pedagogical experiment in parallel groups. The testing technique was applied. The independent variable is our model of literal parallelism in the performance and auditory perception of concrete selected passages from extended-tonal and atonal Serbian music.

The dependent variables are the following: (1) achievement on the initial test, as an indicator of the degree of sensitivity of musical hearing (at the same time melodic and harmonic); as the total number of pitches and chords to be perceived due to recognition was 54 (30 for melodic hearing and 24 for harmonic hearing), musical hearing as an integral phenomenon was measured via numbers between 0 and 54; (2) achievement on the final test, as an indicator of the change in the degree of sensitivity of musical hearing (at the same time melodic and harmonic) after the experimental period; musical hearing was again measured as an integral phenomenon via numbers between 0 and 54; and (3) the difference between the achievements on the initial and final tests, as an indicator of the

change in the degree of sensitivity of musical hearing (at the same time melodic and harmonic).

Measuring instruments. The measuring instruments are the initial and final written tests, which were constructed for the purpose of this research. To measure the improvement of musical hearing, scales of points were applied in the corresponding tasks of the written test, where each accurately recognised pitch or chord was assigned one point. The written test was created in order to obtain the most precise results on the level of musical hearing of students, i.e., on their auditory sensitivity. This caused the composition of assignments, which was completely new for students. The parallel form of the initial and final written tests was carried out through identical requirements, but with a difference in concrete intonation (transposition was performed). This means that students did not solve an identical assignment in the final test, but solved the same assignment at different starting pitches (in transposition).

As musical hearing is manifested through the perception of linear flow (melodies) and vertical components, the written test represented the requirements of both types. The written test consisted of six tasks grouped into two parts:

I – notation of three unknown atonal (dodecapronic) melodies (metrically and rhythmically simple, at a moderate or light tempo), characterised by interval diversity (all quality and distance types between tones are represented — all the way to compound second). These tasks measured the sensitivity of the melodic hearing of the subjects (Figures 1 and 2).



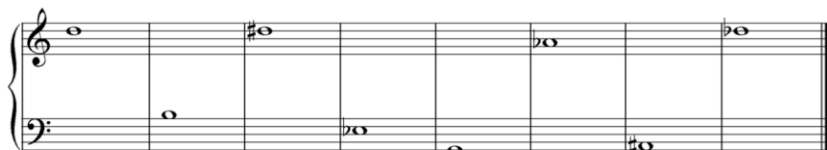
Figure 1. The first task of the written test – students' copy



Figure 2. The first task of the written test – examiner's copy

II – notation of the chords (two, four, and three notes) of a different non-tertian assembly. These tasks measured the sensitivity of the subject's harmonic hearing (Figures 3 and 4).

- 1] Задатак бр. 1: Прво ћете чути означени тон, а потом његово симултано звучање са другим тоном. Потребно је записати други тон.



- 2] Задатак бр. 2: Од задатог тона у узлазном или силазном смеру запишите четворозвук нетерцине структуре. За сваки четворозвук прво ћете чути означени тон, затим симултано извођење сазвучја и још два пута његово разлагање.

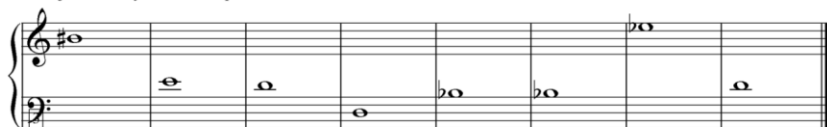


Figure 3. Tasks for measuring the sensitivity of harmonic hearing – students' copy

- 1] Задатак бр. 1: прво ћете чути означени тон, а потом његово симултано звучање са другим тоном. Потребно је записати други тон



- 2] Задатак бр. 2: од задатог тона у узлазном или силазном смеру запишите четворозвук нетерцине структуре. За сваки четворозвук прво ћете чути означени тон, затим симултано извођење сазвучја и још два пута његово разлагање

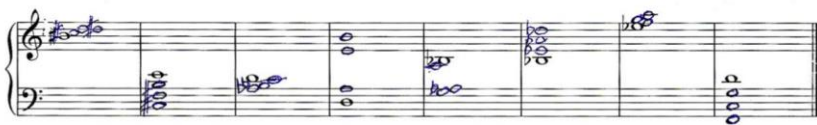


Figure 4. Tasks for measuring the sensitivity of harmonic hearing – examiner's copy

Time, place, and sample of research. The pedagogical experiment lasted six months and was conducted in experimental groups in two cities. The research began when students attended their one-semester subject Solfeggio 5, and was completed during their one-semester subject Solfeggio 6. The pedagogical experiment was conducted in parallel groups at two faculties: the Faculty of Music in Belgrade and the Faculty

of Philology and Arts in Kragujevac. One experimental and one control group were formed at each of the two faculties. A convenient homogeneous sample was formed from third-year students of General Music Pedagogy in Belgrade, and a suitable heterogeneous sample from students of mostly different performing profiles was formed in Kragujevac. The number of examinees was approximately the same in the two higher education institutions, as shown in Table 1.

Table 1. The Sample

Faculty	Frequency	Percentage (%)
Belgrade	17	48.58
Kragujevac	18	51.42
Total	35	100.00

The sample was divided into subsamples: the experimental and control groups of students from Belgrade, and the experimental and control groups of students from Kragujevac. The reasons for this division stem from the importance that solfeggio had for students of music pedagogy from Belgrade, compared to students from Kragujevac, who are mostly performers. In this way, there were actually four groups: the experimental and control one in Belgrade, and the experimental and control one in Kragujevac. The classification of respondents into two parallel groups (both Kragujevac and Belgrade samples) was carried out according to the results of the initial written test. A relatively uniform sample of different educational profiles in the experimental and control groups was formed, as shown in Table 2.

Table 2. Number of points by groups on the initial test

Mixed group – Kragujevac	General music pedagogy – Belgrade
E-group (N=9) = 138	E-group (N=8) = 189
Average achievement by student: 15.33	Average achievement by student: 23.63
C-group (N=9) = 136	C-group (N=9) = 201
Average achievement by student: 15.11	Average achievement by student: 22.33

Statistical data analysis. IBM SPSS version 20 and GraphPad¹ were used when processing test results. Descriptive statistics were applied, as well as non-parametric tests².

¹ <http://www.graphpad.com>

² Descriptive statistics show basic data on a single variable, the number of subjects examined, the minimum and maximum achievement on the task, average achievement (arithmetic mean), and standard deviation (i.e., scattering from the average value).

Organisation and research process. The research was conducted in several stages: making a research plan; selecting fragments of extended-tonal and atonal music for experimental treatment; designing tests and questionnaires; conducting initial tests with the entire sample and sorting into parallel groups based on these results; experimental treatment in experimental groups; organising final tests with the entire sample; and the analysis and interpretation of the results.

EXPERIMENTAL PROGRAM

The experimental program with students classified into experimental groups lasted fifteen weeks. Excerpts from the extended-tonal and atonal music of Serbian composers were processed through a specific multimodal approach, i.e., the methodical concept of literal parallelism over eleven weeks. A colloquium was organised during the last four meetings, and it was an integral part of the experiment. In consultation with subject teachers, students classified in E-groups attended experimental classes for 30 minutes each working week. During this time, work took place in the control groups, which differed from the work in the experimental groups in two key elements: (1) there was no literal parallelism in perception and performance and vice versa, and (2) no passages from Serbian extended-tonal and atonal pieces were applied.

In the experimental course, excerpts from compositions of Serbian music were processed in two ways:

- direction 1: vocal performance → auditory perception → instrumental performance (mostly); and
- direction 2: auditory perception → vocal performance → instrumental performance (in one case).

The first direction is common for melodies that begin with a large number of melodic leaps, which are considered relatively difficult for auditory perception. The beginning of the learning process was achieved by singing from the score. In the next class, the same passage was processed through oral dictation, from the original sound recording and/or piano, where students sang what they heard by solmisation, and then named the tones alphabetically. In compositions with a poetic text, this text was an aggravating factor for recognising tones, so the use of a piano was necessary for auditory perception. In addition, at least one student played the last melody from memory in each class. This was followed by writing one's own melodic and harmonic improvisation to the last processed melody, and then singing certain texts among them. Melodic improvisations were created on the backbone of the same pitch sequence, but of different meters and rhythms, and mostly shifted strong and weak beats, with the occasional consecutive repetition of the same pitch or melodic movements, which is even more desirable. Harmonic improvisations were

created by arranging the tones of the original melody to sound simultaneously. The procedure was as follows: the student noted the first two (successive) tones from the original melody, while the others (as simultaneous chords) were added by choice. Then they took the second and third tones of the melody, repeated the procedure, and so on. The chords were then sounded by singing, broken down from the lowest or highest tone, and their sonority was checked on the instrument through simultaneous and broken playing. The aim was to activate musical thinking, since creation should represent the final stage (after reproduction) in the processing of teaching content of any type, and the same relations between tones should be practiced in different metro-rhythmic contexts.

In the first case – vocal performance → auditory perception → instrumental performance – the beginning was based on analysis, primarily tonal. Given that students already have pre-developed musical thinking, they did not receive specific guidelines on which associations should be applied, but the whole group made suggestions along with the teacher. Thus, some of the strategies involved remembering the previously sung pitch or functional interpretation of intervals. After repeatedly singing with solmisation syllables, in the case of vocal pieces, it was in one instance sung with a poetic text.

AN EXAMPLE OF EXPERIMENTAL WORK

The specifics of the experimental program will be shown on the example of working on the composition for solo soprano and mixed choir by Vojislav Ilić *Nema leba* (*Zapis 1492*). It is composed within the extended-tonal framework, in which the linear flow leads to whole tone clusters. It was chosen because the fortification of whole tone clusters should accelerate their differentiation from chromatic and other cluster structures, and further improve the performance and perception of whole tone sequences. Students were presented with the initial (Figure 5) and final part (Figure 6) of the composition, characterised by the following chords.

After the analysis, the fragments were repeatedly sung in a multi-voice texture. Then, without insight into the sheet music, the original sound recording was listened to, and the students would simultaneously alphabetically pronounce the tones in clusters. In the subsequent class, two passages from *Nema leba* were written as a fill-in dictation exercise. In the next class, the fragments were renewed; then, a melodic improvisation was written on the given tonal series drawn from the fragments of the composition.

Нема леба +3 (1492)*

Војислав Илић

Parlando
Solo mf *Moderato*

Soprani
Alti
Tenori
Bassi

He - ma le - ba ti - sja - ssha che - ti - ri - sta de - vjat - de - set vto - ro - go.

у - - ви!

Tutti
pp

у - - ви!

у - - ви!

у - - ви!

у - - ви!

4

He - ma le - - - ba!

He - ma le - - - ba!

у - - ви!

у - - ви!

у - - ви!

у - - ви!

10

у - - ви!

*+3 = 7000 од стварања света, мање 5508 рођења Христа, равно 1492. година. Запис на айсици манастира Дечани, староња југоисточна сирана.

Figure 5. The beginning fragment (bars 1-15) of Nema leba by V. Ilić

The image shows a musical score for the piece "Nema leba" by V. Ilić. It features four vocal parts: Soprano (S), Alto (A), Tenor (T), and Bass (B), along with piano accompaniment. The score is divided into two systems. The first system (bars 61-64) includes dynamic markings like *p* and *pp*, and performance instructions such as *Solo*. The lyrics are "У - ви - ни!". The second system (bars 65-70) is marked *Tutti rit. e morendo* and includes the lyrics "не - ма ле - - - - ба." and "У - ви - ни!". The piano part provides harmonic support with chords and melodic lines.

Figure 6. The ending fragment (bars 55-70) of *Nema leba* by V. Ilić

The image displays two musical staves, likely representing piano accompaniment. The top staff is in treble clef and the bottom staff is in bass clef. The music consists of simple chords and melodic fragments, illustrating the pitches drawn from the clusters mentioned in the caption.

Figure 7. Pitches drawn from the clusters (*Nema leba*)

It has been suggested that tonal relationships within whole tone clusters should be memorised by improvising a melody in a 5/8 metric type, with each of the clusters being broken down several times. At the same time, the pitch order does not have to be the same as in the composition, and it is even desirable to focus on the melodic leaps of the minor seventh and the compound major second (from the original score) and

their successive repetition, because 'repetition is the mother of all learning' (Figure 8).

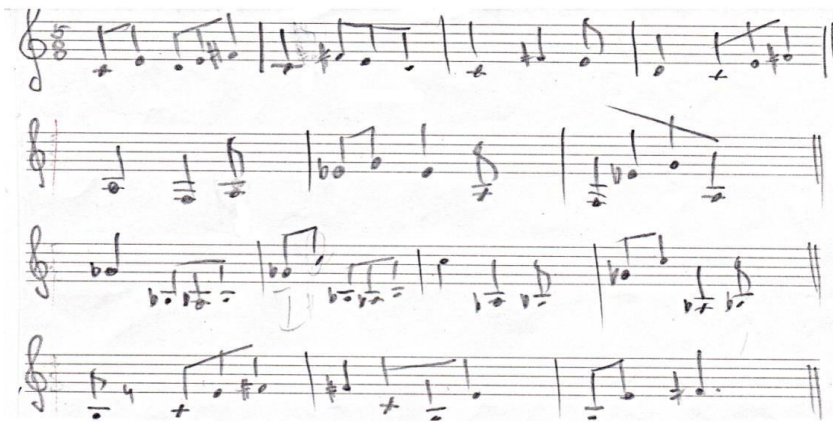


Figure 8. Student's task – improvisation on given clusters

The end of the work on this fragment was based on the singing of student improvisations. In addition to the presented passage from Vojislav Ilić's composition *Nema leba*, the experimental program consisted of excerpts from four other compositions by Serbian composers.

One of the factors that were estimated to influence the motivation for exercise during experimental work was the inclusion of the experimental program in a regular colloquium program. The results of the colloquium showed that the pace of progress in terms of mastering new passages from Serbian extended-tonal and atonal literature was somewhat slower compared to the original expectations.

THE PRESENTATION AND DISCUSSION OF RESULTS

The aim of the research was to examine the influence of a multi-modal approach. More precisely, the aim was to examine the effect of the previously described literal parallelism on improving musical hearing in third-year university students, i.e., students in the last year of learning solfeggio. The results we received will be displayed – due to the limited length of this text – only partially.

Achievement on the Initial Test – an Indicator of the Degree of Sensitivity of Musical Hearing as an Integral Phenomenon (Both Melodic and Harmonic)

The total number of pitches and chords that needed to be written or marked when recognised was 54 (30 for melodic hearing and 24 for har-

monic hearing). Members of the E-group in Kragujevac achieved an average of 15.33 out of the total 54 points per test, and members of the C-group in the same city achieved almost identical results – 15.11 points. In contrast, members of the Belgrade E-group scored an average of 23.63 points, while the subjects of the Belgrade C-group gained 22.33 points each (also out of the total 54 points per test). The fact that no group scored even half of the maximum 54 points on average showed that there was room for advancement in terms of improving musical hearing, but also that the set tasks regarding the auditory perception of unknown dodecaphonic melodies and non-tertian chords are very demanding.

*Achievement on the Final Test – an Indicator of the Degree of Sensitivity of Musical Hearing as an Integral Phenomenon
(Both Melodic and Harmonic)*

Musical hearing was re-measured on the final test via numbers between 0 and 54 (30 for melodic hearing and 24 for harmonic hearing). Members of the E-group in Kragujevac cumulatively achieved 193 points, i.e., an average of 21.44 out of the total 54 points per student. C-group respondents (Kragujevac) achieved a total of 124 points, which means an average of 13.78. Members of the Belgrade E-group scored an aggregate of 212 points, i.e., an average of 26.5 points, while members of the Belgrade C-group gained a total of 224 points, i.e., 24.89 points on average per tested student. The E-group achieved noticeably better results compared to the C-group in Kragujevac, but E-group in Belgrade displayed only a slight advantage compared to the C-group.

*The Difference between the Achievements on the Initial and Final Tests, as an Indicator of the Change in the Degree of Sensitivity of Musical Hearing
(Both Melodic and Harmonic)*

There is no statistically significant improvement at the Faculty of Philology and Arts in Kragujevac. Analogous to the progress of the entire sample, although the E-group improved significantly while the C-group performed slightly worse on the final test than on the initial test, the difference is not statistically significant (Chart 1).

Then, a more uniform improvement in musical hearing of the two groups is observed at the Faculty of Music in Belgrade. The E-group progressed slightly more, but the improvement is not statistically significant in the case of either group (Chart 2).

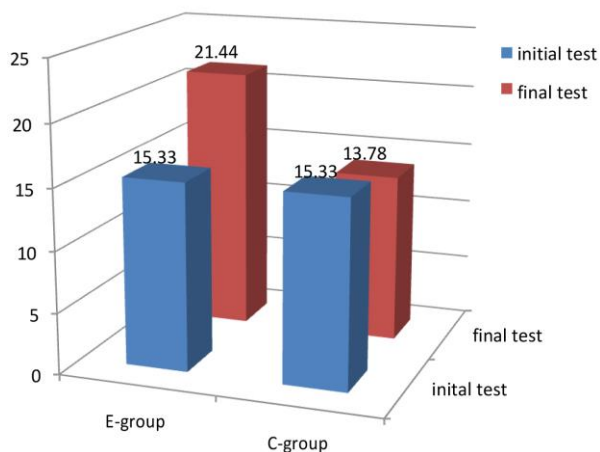


Chart 1. Change in musical hearing sensitivity of E- and C-group in Kragujevac

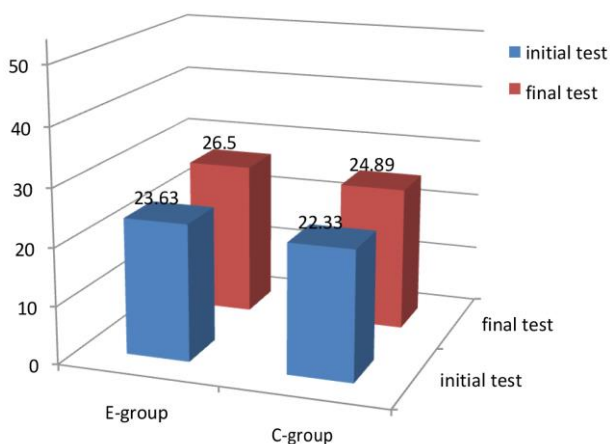


Chart 2. Improvement in musical hearing of E- and C-group in Belgrade

The Difference between the Achievements on the Initial and Final Tests, as an Indicator of the Change in the Level of Melodic Hearing of the Subjects

At the Faculty of Philology and Arts in Kragujevac, the E-group slightly improved its achievement, and the C-group lowered it.

None of the two groups at this faculty achieved a statistically significant change in performance.

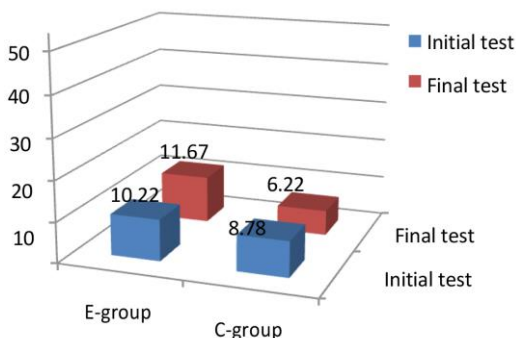


Chart 3. Change of achievement from test to re-test by melodic hearing parameter in Kragujevac

Table 3. Results of descriptive statistics and t-tests of C- and E-groups on initial and final measurement (melodic hearing, Kragujevac, N=18)

Variable	Group	N	Initial measurement					Final measurement				
			M	SD	t	df	p	M	SD	t	df	p
Harmonic hearing	E	9	10.22	5.78	0.4507 ¹	16	0.6583	11.67	7.68	0.5294 ³	16	0.6038
	C	9	8.78	5.76	0.9610 ²	16	0.3508	6.22	5.52	1.7287 ⁴	16	0.1031

Results: ¹ t-test of initial and final measurement of E-group,

² t-test of initial and final measurement of C-group, ³ t-test of initial state of both groups,

⁴ t-test of final state of both groups

Unlike the Faculty of Philology and Arts in Kragujevac, the experimental group at the Faculty of Music in Belgrade gained on average the same number of points on both the initial and final tests, and the C-group's performance was slightly reduced (Chart 4).

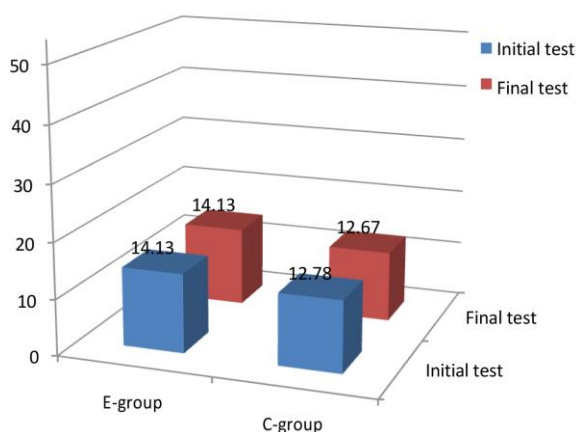


Chart 4. Change of achievement from test to re-test by melodic hearing parameter in Belgrade

There is no statistically significant difference from test to re-test.

Table 4. Results of descriptive statistics and t-tests of E- and C-groups on initial and final measurement (melodic hearing, Belgrade, N=17)

Variable	Group	N	Initial measurement					Final measurement				
			M	SD	t	df	p	M	SD	t	df	p
Harmonic hearing	E	8	14.13	5.22	0.0000 ¹	14	1.0000	14.13	8.25	0.3780 ³	15	0.7107
	C	9	12.78	8.80	0.0315 ²	16	0.9753	12.67	5.89	0.4238 ⁴	15	0.6777

Results: ¹ t-test of initial and final measurement of E-group,

² t-test of initial and final measurement of C-group, ³ t-test of initial state of both groups,

⁴ t-test of final state of both groups

The Difference between the Achievements on the initial and Final Tests, as an Indicator of the Change in the Level of Harmonic Hearing of the Subjects

In the mixed group in Kragujevac, members of the E-group achieved a statistically significant improvement in harmonic hearing, while members of the C-group also progressed, but not statistically significantly.

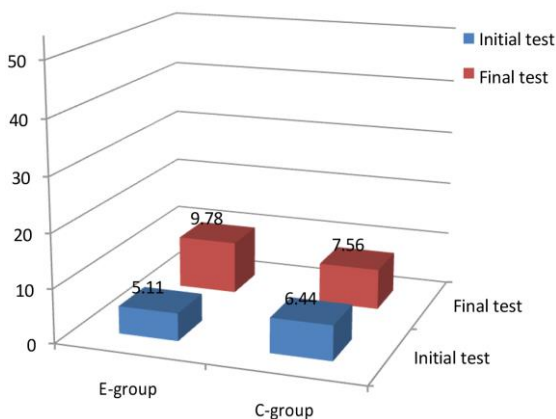


Chart 5. Changes in harmonic hearing (Kragujevac)

Table 5. Results of descriptive statistics and t-tests of E- and C-groups on initial and final measurement (harmonic hearing, Kragujevac, N=18)

Variable	Group	N	Initial measurement					Final measurement				
			M	SD	t	df	p*	M	SD	t	df	p
Harmonic hearing	E	9	5.11	3.89	2.53271	16	0.0222	9.78	3.93	0.67253	16	0.5109
	C	9	6.44	4.48	0.54762	16	0.5915	7.56	4.13	1.16824	16	0.2598

Therefore, the results of the experimental group (Kragujevac) were statistically (at the level of 0.05) better than the results of the control group (Kragujevac).

At the Faculty of Music in Belgrade, both groups achieved improvement, but not statistically significantly.

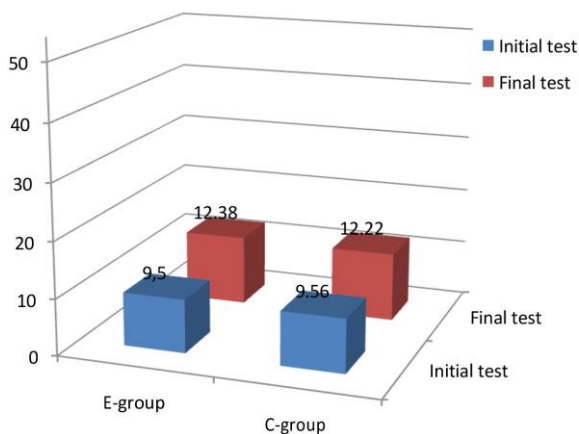


Chart 6. Changes in harmonic hearing (Belgrade)

Table 6. Results of descriptive statistics and t-tests of E- and C-groups on initial and final measurement (harmonic hearing, Belgrade, N=17)

Variable	Group	N	Initial measurement					Final measurement				
			M	SD	t	df	p	M	SD	t	df	p
Harmonic hearing	E	8	9.50	5.07	0.9158 ¹	14	0.3753	12.38	7.29	0.0275 ³	15	0.9784
	C	9	9.56	3.91	1.4927 ²		0.1550	12.22	3.67	0.0582 ⁴	15	0.9543

Results: ¹ t-test of initial and final measurement of E-group,

² t-test of initial and final measurement of C-group, ³ t-test of initial state of both groups,

⁴ t-test of final state of both groups

CONCLUSION

The hypothesis (a specific form of multimodal approach – literal parallelism through the perception and performance of extended-tonal and atonal music of Serbian composers – contributes not only to the increase of the fund of stable musical-auditory representations but also to the improvement of musical hearing expressed through accuracy in the perception of unknown musical content) is partly proven. Namely, only members of the E-group from Kragujevac, mostly musical performers, improved hearing compared to the parallel C-group. This does not apply to hearing observed integrally (with the ability to accurately perceive melodies), but to harmonic hearing. For members of the E-group from Belgrade, future music pedagogues, there was no significant difference in relation to the achievements of the parallel C-group. It is possible that the cause is the fact that the E-group from Kragujevac showed weaker fore-knowledge than the E-group from Belgrade, and also had more room for

advancement at the beginning of experimental classes. Experimental learning based on singing, auditory perception, and playing the same passages seems to have influenced the strengthening of auditory representations. In addition to creating multimodal representations, it is likely that singing intervals (which was one of the requirements of the colloquium and was an integral part of the preparation for singing during the experimental period) influenced the better recognition of other pitches compared to the given pitch in harmonic tasks.

In general, the E-group from Kragujevac proved to be more receptive to processing complex sound content than the E-group from Belgrade, and progressed more during the experimental period, although the E-group from Belgrade showed greater success in terms of the average number of points per student both on the initial and final tests.

In view of the obtained results, the limitations of this empirical research should be mentioned. Namely, the limiting factor was primarily the small number of participants, which is also common at art faculties, especially in the case of research that goes beyond the survey as an interrogation technique. Another aggravating factor was the limited working time (30 minutes per week, and the limited number of working weeks), since the time, apart from the selection of the sample (group of students), was practically appropriate, i.e., this is the maximum amount of time that the lecturers could give to the researcher for the realisation of experimental teaching. In future research, the effectiveness of the methodical concept of literal parallelism in perception and performance, i.e., performance and perception, should be examined on the results of research conducted primarily in elementary music education (which is the most important), and then at subsequent levels of education. Without solid mental representations of tonality, people with relative pitch can hardly progress in terms of performing and perceiving extended-tonal and atonal music. Also, it would be interesting to examine how literal parallelism in the perception and performance of extended-tonal and atonal music of Serbian composers affects the improvement of musical hearing expressed through the interpretation of tonal music. Additionally, the success of students with passive absolute pitch should be examined in the framework of research with the same goals and tasks.

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РАЗВОЈ МУЗИЧКОГ СЛУХА У НАСТАВИ СОЛФЕЋА КРОЗ МУЛТИМОДАЛНИ ТРЕТМАН АТОНАЛНЕ И ПРОШИРЕНО-ТОНАЛНЕ МУЗИКЕ СРПСКИХ КОМПОЗИТОРА

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Резиме

Успешно тумачење проширено-тоналног и атоналног музичког стваралаштва настало је током 20. и 21. века представља један од подразумеваних задатака целокупне наставе на студијама музике и један од предуслова професионалне компетентности. Чињеница је, ипак, да се музици без тоналног упоришта, а посебно компонованој од стране српских композитора, не посвећује одговарајућа пажња.

Много је фактора који утичу на то да се атонална музика теже опажа, разуме, меморише и репродукује у односу на тоналну. Приликом когнитивне обраде централно је питање механизма груписања који се врши према законитостима гешталта, а атонална остварења претежно нису у складу са њима. Као логична по-

слевица таквих предиспозиција за когнитивну обраду атоналности произлази негативно реаговање – негативна осећања укључујући фрустрацију и узнемирење.

Истраживања показују да и музичари и немусичари показују мањак емоционалних реакција на атоналну музику. Осећања се неминовно одражавају на процес учења. Изазов пред којим се налази наставник јесте како побудити, али и задржати интерес већине студената за музику ових карактеристика. Адекватно средство на том путу су поновљена излагања.

Концепт дословни паралелизам у опажању и извођењу проширено-тоналне и атоналне музике српских композитора, односно мултимодални третман, заснован је на понављању и усмерен против заборављања, тј. ишчезавања звучних информација у памћењу. У њему се музичка информација двострано или вишеструко третира, пре свега кроз репродукцију, али и кроз дубљу когнитивну обраду звучних информација.

Са циљем да се испита утицај дословног паралелизма у слушном опажању и извођењу на побољшање музичког слуха код студената треће године студија на два факултета, урађено је експериментално истраживање. На основу теоријског истраживања постављена је хипотеза да дословни паралелизам кроз опажање и извођење проширено-тоналне и атоналне музике српских композитора доприноси не само обогаћењу фонда стабилних музичко-слушних представа, већ и побољшању музичког слуха исказаног кроз тачност у опажању непознатих инструктивних музичких садржаја. Хипотеза је само делимично потврђена, што се може објаснити релативно малим бројем (студената) испитаника, уобичајеним за уметничке факултете у Републици Србији.

У будућим истраживањима требало би испитати делотворност методичког концепта дословног паралелизма у опажању и извођењу, односно извођењу и опажању, на музички слух првенствено у основношколском образовању, а потом и на наредним нивоима музичке едукације.

ARTIFICIAL INTELLIGENCE IN THE COURT JUSTICE SYSTEM

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Abstract

Modern society is characterised by the pervasive presence of information and communication technologies. The growing demands of today's economy and society for enhanced and efficient products and services have led to the continual advancement of the technological sector. Among these advancements, artificial intelligence stands out as a particularly noteworthy phenomenon. Artificial intelligence entails the capacity of computer programmes to emulate human intelligence and perform a wide array of tasks. Its implementation has ushered in various advantages, allowing individuals to accomplish tasks like online banking, virtual meetings, and digital conversations without the requirement of physical presence. Despite these benefits, the adoption of new technologies also introduces potential risks to fundamental rights and freedoms, including privacy, personal data protection, and individual liberty. The application of artificial intelligence (AI) in the justice system has been a topic of growing interest and debate. AI technologies are being explored and implemented in various aspects of the justice system to improve efficiency, accuracy, and access to justice.

Key words: artificial intelligence, civil law, predictive policing, document automation.

ВЕШТАЧКА ИНТЕЛИГЕНЦИЈА У СУДСКОМ ПРАВОСУДНОМ СИСТЕМУ

Апстракт

Савремено друштво карактерише свеprisутно присуство информационих и комуникационих технологија. Растући захтеви данашње привреде и друштва за побољшаним и ефикасним производима и услугама довели су до сталног на-

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претка технолошког сектора. Међу овим наплетцима, вештачка интелигенција се истиче као феномен вредан пажње. Вештачка интелигенција подразумева способност компјутерских програма да опонашају људску интелигенцију и обављају широк спектар задатака. Његова имплементација довела је до различитих предности, омогућавајући појединцима да остваре задатке као што су онлајн банкарство, виртуелни састанци и дигитални разговори без физичког присуства. Упркос овим предностима, усвајање нових технологија такође уводи потенцијалне ризике по основна права и слободе, укључујући приватност, заштиту личних података и личну слободу. Примена вештачке интелигенције (АИ) у правосудном систему је тема све већег интересовања и дебате. Технологије вештачке интелигенције се истражују и примењују у различитим аспектима правосудног система како би се побољшали ефикасност, тачност и приступ правди.

Кључне речи: вештачка интелигенција, цивилно право, предиктивно закључивање, аутоматизација документације.

INTRODUCTION

Not too long ago, there was a prevailing belief that the realms of Artificial Intelligence (AI) or Machine Learning (ML) would have minimal impact on the field of law. The legal profession, characterised by its need for specialised skills and nuanced human judgment, was thought to be inherently resistant to the transformative influence of digital advancements. However, the adoption of ML technology in the legal domain is now becoming commonplace. It is viewed as a valuable tool, not only streamlining tasks for legal professionals but also offering enhanced analyses of expansive datasets to assist in legal decision-making across global judicial systems (Ziemianin, 2021).

Another significant domain where Machine Learning (ML) is applied in judicial systems is within the realm of ‘predictive justice.’ This entails the utilisation of ML algorithms to conduct a probabilistic analysis of specific legal disputes by referencing case law precedents. To function effectively, these systems depend on extensive databases comprising past judicial decisions. These decisions must be translated into a standardised language capable of constructing predetermined models (Karmaza, et. al. 2021). These models, in turn, play a crucial role in enabling machine learning software to generate predictions.

The initial emergence of ‘predictive justice’ came to light in the United States as far back as 2013, notably in the case of *State v. Loomis*. This marked the first instance where the court employed predictive justice in the context of sentencing. In the trial involving Mr Loomis, a U.S. citizen facing charges of participating in a drive-by shooting, receiving stolen goods, and resisting arrest, the circuit court utilised a predictive machine learning tool to assist in its sentencing determination. The outcome was a custodial sentence imposed by the judge, influenced by the ma-

chine learning software's indication of a high probability of the defendant engaging in similar offenses again (Rigano, 2019).

As the use of AI technologies advances, judicial systems are becoming engaged in legal questions concerning the implications of AI for human rights, and surveillance and liability, among others. In addition, judicial systems are also using AI systems for judicial decision-making processes that have raised concerns for fairness, accountability and transparency in decision making by automated or AI-enabled systems (Vo & Plachkinova, 2023). The potential of AI is already being explored by many judicial systems that include the judiciary, prosecution services, other domain specific judicial bodies around the world, and the criminal justice field to provide investigative assistance and automate/facilitate decision-making processes.

Nevertheless, the use of AI poses a wide range of challenges to be addressed: from pattern recognition, ethics, and biased decisions taken by AI-based algorithms, to transparency and accountability. Self-learning algorithms, for instance, may be trained by certain data sets (previous decisions, facial images or video databases, etc.) that may contain biased data that can be used by applications for criminal or public safety purposes, leading to biased decisions (Rafanelli, 2022).

Considering rapid developments in this field, the challenges and opportunities related to harnessing AI in the field of justice and how AI-based systems can help judicial actors in their roles within the administration of justice and to handle cases involving AI that impacts human rights must form part of discussions among stakeholders from the judicial ecosystem (Milev & Tretynyk, 2023).

While AI presents several opportunities to enhance the justice system, there are also challenges and concerns. These include issues related to transparency, accountability, bias in algorithms, data privacy, and the potential impact on human judgment and decision-making (Yu, 2023). When we talk about human rights and data protection, some significant research was conducted in recent years (Dimovski, 2021). The results of such research show the current situation regarding the protection of human rights, the protection of personal data and so on (Djukanovic, 2021; Turanjanin, 2021). Striking the right balance between innovation and safeguarding individual rights is crucial in the ongoing development and adoption of AI in the justice system. Legal and ethical frameworks are being developed to address these challenges and ensure the responsible use of AI technologies in the legal domain.

The paper is organised as follows. The second section defines the research hypothesis, based on which the research is organised. The third section presents the investigation of AI use for legal research and analysis. The fourth section presents the investigation of AI use for predictive policing. The fifth section presents the investigation of AI use for risk as-

assessment in criminal justice. The sixth section presents the main conclusion, advantages and disadvantages of AI use in the court justice system. Finally, the last section gives a list of papers with the same field of research, which we used during our investigation.

METHODOLOGY AND RESEARCH QUESTIONS

As the application of Artificial intelligence in law and the judicial system is becoming more widespread, some of the areas of application are highlighted. In order to adequately assess the current state of application based on artificial intelligence in certain areas of law, our investigation began by setting certain hypotheses:

- Can AI-based applications be used to research and analyse legal documents and data?
- Can applications based on artificial intelligence be used to predict the commission of criminal or misdemeanour acts?
- Can AI-based applications be used for risk assessment?

The defined hypotheses are addressed by looking at the currently available expressions in this area. The answers to the previously defined hypotheses described in the continuation of the research were obtained by looking at examples of court practice. In addition to court practice, the answers were gained by looking at examples of legal practice, as well as publicly available data. The main focus was on examples of judicial and legal practice that confirm or deny the benefits of using AI. The tools that were used in specific examples were also reviewed.

AI-SUPPORTED LEGAL RESEARCH AND ANALYSIS

AI-powered tools can assist legal professionals in conducting legal research more efficiently. Legal Research and Analysis involve the process of gathering, evaluating, and interpreting legal information to support legal decision-making, case preparation, and the practice of law. The integration of technology, including artificial intelligence (AI) and machine learning (ML), has significantly impacted and improved legal research processes. Historically, legal research involved manually searching through legal texts, statutes, case law, regulations, and other legal documents to find relevant information. Legal professionals, including attorneys, paralegals, and law students, spent significant time and effort in libraries or using legal databases to gather information (Faghiri, 2022). With the advent of technology, legal research shifted from manual methods to computer-assisted methods. Online legal databases, such as Westlaw and LexisNexis, became popular tools for legal research. Elec-

tronic resources allowed for faster and more efficient searches, but the process still required human interpretation and analysis.

AI and machine learning technologies have been integrated into legal research tools to enhance efficiency and accuracy. Natural language processing (NLP) algorithms enable these tools to understand and interpret human language, improving the relevance of search results. AI-powered legal research platforms can analyse vast databases of legal information, extract key insights, and provide more nuanced and context-aware results (Katz, et. al, 2023). Natural Language Processing (NLP) stands at the forefront of the intersection between computer science, artificial intelligence, and linguistics. Its mission is to equip machines with the ability to comprehend, interpret, and respond to human language in a way that is both meaningful and contextually aware. At its core, NLP seeks to bridge the gap between the intricacies of human communication and the computational power of machines. The spectrum of NLP applications is broad, ranging from fundamental language tasks such as language translation and speech recognition to more advanced processes like sentiment analysis and text summarisation. NLP technologies power virtual assistants, chatbots, language translation services, and a myriad of applications that enhance human-computer interaction. Challenges persist, including the nuances of language, cultural variations, and the need to mitigate biases embedded in training data (Dixon & Briks, 2021).

As NLP continues to evolve, its impact on various industries, from healthcare to finance, promises to reshape how we communicate with and through technology (Mulder, Valcke, & Baeck, 2023). With advancements in deep learning and neural networks, NLP is steadily breaking new ground, bringing us closer to a future where machines truly understand and respond to human language in a natural and intuitive manner. NLP has emerged as a transformative force within the justice system, revolutionising how legal professionals analyse, interpret, and manage vast volumes of legal texts. NLP technologies bring unprecedented efficiency and accessibility to legal research, case analysis, and information retrieval, thereby reshaping the landscape of legal practices. One of the prominent applications of NLP in the justice system is legal document analysis. NLP algorithms can sift through extensive legal databases, statutes, and case law, extracting relevant information and providing legal professionals with timely insights. This capability significantly expedites legal research processes, allowing attorneys and legal scholars to focus more on strategic analysis rather than laborious information retrieval (Medvedeva, Wieling & Vols, 2023). NLP also plays a pivotal role in e-discovery, where the analysis of electronic documents for legal proceedings is a complex task. Machine learning models, powered by NLP, can rapidly categorise and identify pertinent information, aiding legal teams in document review and due diligence processes. This not only acceler-

ates the pace of legal investigations but also ensures a more thorough and accurate analysis of digital evidence. Legal professionals leverage NLP-powered tools for sentiment analysis in legal texts, helping gauge the tone and implications of statements in court documents, contracts, or public records. This nuanced understanding contributes to more informed decision-making during legal proceedings. Moreover, NLP facilitates the development of virtual legal assistants and chatbots that interact with users in a natural language. These tools enhance accessibility to legal information, guiding individuals through legal processes, explaining complex legal concepts, and even assisting in the preparation of legal documents. This democratisation of legal information empowers individuals who may not have easy access to legal counsel (Reiling, 2020). However, the integration of NLP in the justice system is not without challenges. Ensuring the fairness and transparency of algorithms, addressing potential biases in training data, and upholding ethical standards are critical considerations. Legal professionals and technologists collaborate to strike a balance between leveraging the efficiency gains of NLP and maintaining the integrity of legal processes. In summary, NLP is a catalyst for innovation within the justice system, streamlining legal workflows, improving access to legal information, and contributing to a more efficient and equitable legal landscape (Mumcuoglu, et. al. 2021). As NLP technologies continue to advance, their impact on legal practices is poised to deepen, fostering a future where legal professionals can harness the power of language to navigate the complexities of the law more effectively.

AI can aid individuals in locating desired information within extensive digital document collections. The advantages of natural language processing, as opposed to conventional keyword searches, are exemplified by the widespread use of Google. When laypeople endeavour to address legal issues independently, they typically initiate the process with a Google search. This approach is likely common among lawyers as well (Andreev, Laptev, & Chucha, 2020).

Certain providers of legal research distinguish themselves by emphasising an AI-centric approach, with many incorporating various AI techniques. Ross Intelligence, for instance, positions itself as a developer of 'AI-driven products to enhance lawyers' cognitive capabilities,' encompassing features like natural language searching and identification of 'bad law.' Nevertheless, the majority of legal research tools leverage automation and/or machine learning to assist researchers in identifying and connecting with precedents related to a specific case passage or paragraph (Evstratov & Guchenkov 2020). Many of these tools also make use of natural language processing for query purposes. Notably, LexisNexis integrates 'AI-powered features' into its legal research platforms. AustLII

similarly employs automation in its NoteUp function, which identifies documents relevant to the one being viewed¹.

Legal research also incorporates the use of expert systems. AustLII's Datalex platform, for instance, facilitates the conversion of statutes into a machine-readable format (Rodrigues, 2020). This enables users to determine the application of a statute in a specific situation by responding to a series of questions. This approach, further discussed in the following section on "Rules as Code – Implications for the Judiciary," offers the advantage of providing outputs that detail the reasons for the application or non-application of a specific provision, along with statutory references (Collenette, Atkinson, & Bench-Capon, 2023). This process is likely quicker than the traditional method of reading a statute from start to finish.

In Australia, services such as Auscript, Transcription Australia and Epiq provide courts with transcription services, some of which boast real-time transcription. Voice recognition and transcription can be automated and, globally, the speech recognition market is expected to be worth at least 18 billion USD by 2023. IBM has achieved a 5.5% word error rate (compared to the standard human error rate of 5.1%), with a 'dramatic improvement in accuracy' driving the likelihood that court reporting will increasingly be an automated process. VIQ Solutions reportedly uses AI transcription and, in 2020, they announced they had secured a contract for transcription services with Queensland's Department of Justice and Attorney-General.

Some Chinese courts use real-time voice recognition to produce court transcripts. iFLYTEK is a technology company used during some trials which translate real-time audio into Mandarin and English text. In Shanghai, at least ten courts are piloting the complete replacement of judicial clerks with AI assistants, whose role it is to transcribe cases, pull files and present digital evidence².

AI FOR PREDICTIVE POLICING

Predictive policing stands at the forefront of law enforcement innovation, leveraging advanced analytics and artificial intelligence to enhance crime prevention and resource allocation (Berk, 2021) This approach moves beyond traditional reactive strategies, aiming to forecast and proactively address potential criminal activities. At its core, predic-

¹ 'The Power of Artificial Intelligence in Legal Research' (October 2020) The Power of Artificial Intelligence in Legal Research (lexisnexis.com)

² Deputy President of Xuhui District People's Court Xu Shiliang, quoted in Sarah Dai, 'Shanghai Judicial Courts Start to Replace Clerks with AI Assistants', South China Morning Post (1 April 2020)

tive policing employs machine learning algorithms to analyse historical crime data, identifying patterns and trends that may indicate where future incidents are likely to occur (Storbeck, 2022). This data-driven approach allows law enforcement agencies to optimise their resources and deploy officers more effectively to areas with higher predicted crime rates. Key components of predictive policing include:

1. Crime Hotspot Analysis algorithms for analysing historical crime data to identify geographic areas with a higher likelihood of criminal activity. Law enforcement can then focus efforts on these hotspots to deter and prevent crimes.
2. Temporal Analysis - predictive models consider the time of day, day of the week, or specific events when assessing the likelihood of crime. This temporal analysis helps law enforcement allocate resources during periods of higher risk (Maxim, 2022).
3. Resource Allocation - predictive policing enables law enforcement agencies to allocate resources more efficiently. This may include adjusting patrol routes, increasing presence in high-risk areas, or implementing targeted interventions.
4. Preventive Strategies - law enforcement agencies can implement preventive strategies based on predictive models, such as community engagement initiatives, public awareness campaigns, or interventions aimed at addressing underlying issues contributing to crime.

While predictive policing holds promise in improving law enforcement strategies, ethical considerations and potential biases in the data used to train these models are areas of concern. It is crucial to ensure that predictive models are fair, transparent, and used as tools to support, rather than replace, human judgment in policing.

As predictive policing continues to evolve, ongoing collaboration between law enforcement, data scientists, and community stakeholders is essential to strike a balance between leveraging technology for crime prevention and safeguarding individual rights and privacy. The ethical deployment of predictive policing technologies is paramount to building trust and ensuring the equitable and just application of law enforcement strategies.

AI FOR RISK ASSESSMENT IN CRIMINAL JUSTICE

Artificial Intelligence (AI) is increasingly integrated into risk assessment processes within the criminal justice system, promising to enhance decision-making and resource allocation. The application of AI in risk assessment involves leveraging machine learning algorithms to analyse various factors and predict the likelihood of a defendant reoffending

or failing to appear in court. While these technologies offer potential benefits, ethical considerations and concerns about fairness and bias must be carefully addressed. Key aspects of AI in risk assessment are stated in the following text. One of the key aspects are predictive algorithms. By this we means that AI algorithms analyse historical data, including criminal records, demographics, and socio-economic factors, to generate risk scores. These scores aim to assist judges and parole boards in making more informed decisions about bail, sentencing, and parole [9]. In second place is individualised risk assessment which represents AI systems striving to provide more individualised risk assessments, moving away from one-size-fits-all approaches. By considering a broader range of factors, including the defendant's personal history and circumstances, these systems aim to improve the accuracy of risk predictions (Raphael Souza, Amilton & Sperandio Nascimento, 2022). Data-Driven Decision-Making represents AI systems in risk assessment relying heavily on data to identify patterns and correlations. Ensuring the quality and representativeness of the data is crucial to avoid reinforcing existing biases and disparities within the criminal justice system. Transparency and Accountability represents an Ethical deployment of AI in risk assessment, which requires transparency in how algorithms operate and the factors they consider (Douglas, et. al. 2020). Accountability mechanisms must be in place to address concerns related to biased outcomes and the potential impact on individuals, especially in marginalised communities. Human Oversight represents AI systems that can provide valuable insights, though human judgment remains essential. Judges and decision-makers should view AI-generated risk assessments as tools to inform their decisions rather than as conclusive determinants.

Selecting the optimal risk assessment tool for a given application requires trade-offs to be made between false negatives and false positives; attempts to reduce the number of false positives will increase the number of false negatives [Reference Walker23]. Tools with a low rate of false negatives (due to high sensitivity) will be most effective at protecting the public, and may garner most political support, while tools with a low rate of false positives (due to high specificity) will best protect the rights and interests of prisoners and psychiatric patients.

The optimal balance between false positives and false negatives is an ethical issue and will depend on the social and political context in which the tool is to be used (Reference Sinnott-Armstrong, Buzzi, Hyman, Raichle, Kanwisher, Phelps and Morse24). For example, the avoidance of false positives may be more important in jurisdictions with less humane detention practices than in jurisdictions with more humane practices, since the less humane the conditions of detention, the greater the harm false positives will tend to impose on the assessed individual (Jesper, 2011).

The appropriate balance between false positives and false negatives will also depend on the stage in the criminal justice process or patient pathway at which the tool will be deployed. For instance, suppose that a risk assessment tool is used to inform decisions about post-sentence detention in a setting where an individual's initial sentence is proportionate to their degree of responsibility and the seriousness of the crime. Detaining the individual beyond the end of the initial sentence thus involves imposing a disproportionately long period of detention. In this context, special care should be taken to avoid false positives, and there may be grounds to prefer a tool with a very low false positive rate to one that is overall more accurate.

However, the situation is different when a tool is used to inform parole decisions. In this context, false positives may lead to refusal of parole and an unnecessarily long period of incarceration from the point of view of public protection. Yet if we assume that the initial sentences are themselves proportionate, then the overall period of detention for 'false positive' individuals will remain within the upper limit set by considerations of proportionality. In this context it may be more important to avoid false negatives.

Matching risk assessment tools to different contexts of application thus requires trade-offs between positive and negative predictive accuracy. For each context, we must first decide which type of accuracy to prioritise to which degree, and then select a tool that reflects this priority (Suparto, Ellydar, Ardiansyah & Jose, 2023). Unfortunately, in the absence of reliable data, it is not possible to make the latter decision confidently. There is a need for studies using representative samples for relevant subpopulations, avoiding highly selected samples, and presenting performance measures that allow false negative and false positive rates to be reliably estimated for a particular application.

Some U.S. jurisdictions use AI systems to augment and, in part, replace judicial discretion in the prediction of the likelihood that an accused (re)offends in the context of criminal bail and sentencing decisions. For example, the Correctional Offender Management Profiling for Alternative Sanctions tool (COMPAS) is used to conduct risk assessment by drawing on the historical data of offenders and analysing that data to produce an output based on the particular offender's conduct and background. COMPAS integrates 137 responses to a questionnaire, which includes questions ranging from the clearly relevant consideration, 'How many times has this person been arrested before as an adult or juvenile', to the more opaque 'Do you feel discouraged at times'. Importantly, the code and processes underlying COMPAS is secret, and thus not known to the prosecution, defence or judge. COMPAS was developed in 1998, and can be used firstly to predict the likelihood that an accused will fail to appear for trial (the 'Pretrial Release Risk' scale), secondly, to predict the

likelihood that an offender will commit subsequent offences (the ‘General Recidivism’ scale), and thirdly, to predict the likelihood that an offender will commit a violent act in the future (the ‘Violent Recidivism’ scale) (Bell, et. al. 2022). The outcome of each assessment can be used by a court to determine, for example, whether the accused should be released on bail pending trial or be subject to a suspended sentence (recognisance release order) in lieu of a custodial sentence. COMPAS, and risk assessment tools like it, predict the future behaviour of individuals who are either accused of criminal wrongdoing or are incarcerated after having been convicted of a crime. Factors that risk assessment tools might take into account include education and employment, family, socioeconomic and geographical background, and association with convicted criminals by way of family or broader networks. COMPAS has faced a superior court challenge in the U.S. In 2013, Eric Loomis was charged and convicted in relation to a drive-by shooting. The Circuit Court noted that COMPAS had indicated that Loomis had a high risk in each of the pretrial recidivism, general recidivism and violent recidivism scales. On appeal, the Supreme Court of Wisconsin was asked whether the use of the COMPAS tool in sentencing violates a defendant’s right to due process, either because the secret nature of COMPAS prevents defendants from challenging the assessment’s scientific validity, or because COMPAS assessments take gender into account. Justice Bradley, in delivering the reasons of the Court, held that the use of COMPAS by a court was permissible, so long as the judge made the final determination as to the sentence³.

In a 2016 investigation, the non-profit ProPublica looked at about ten thousand criminal defendants in Broward County, Florida, whose penalty consequent on the finding of criminal guilt had been, at least in part, informed by COMPAS. ProPublica’s analysis found that African American defendants were at an increased risk of receiving a false positive COMPAS score (meaning that they were more likely to be flagged as high risk despite not, in fact, being high risk), whereas white defendants were more likely to receive a false negative COMPAS score (meaning that they were more likely to be flagged as low risk despite not, in fact, being low risk)⁴.

³ Loomis v Wisconsin, 26 June 2017, Docket no 16-6387

⁴ Angwin et al (n 79); cf Matthew G Rowland, ‘Technology’s Influence on Federal Sentencing: Past, Present and Future’ (2020) 26 Washington and Lee Journal of Civil Rights and Social Justice 565, 611 who argues that a ‘single report or study alone is not enough to provide a definitive assessment of the technology’. See further ‘Injustice Ex Machina: Predictive Algorithms in Criminal Sentencing’, UCLA Law Review (19 February 2019) (‘Injustice Ex Machina’) who says that the inaccuracy of the false positive rate is a necessary trade-off for the accuracy of the true positive rate, and so ultimately comes down to a developer’s notion of justice and fairness as a balance between defendant and community interests

CONCLUSION

Artificial intelligence brings many benefits to traditional social concepts by helping with efficiency and effectiveness in performing many business and private activities, faster and better than a human can do. The fields of application of artificial intelligence are numerous and include important sectors such as agriculture, transport, hospitality, tourism, health, sports, art, etc. Bearing in mind that artificial intelligence directly affects the lives of citizens and the functioning of society, legal systems and legal science should not remain silent on its appearance and the increasing use of new technologies in everyday social and business activities. As AI technologies permeate various facets of legal processes, from legal research and case prediction to courtroom proceedings, they offer unparalleled efficiency, data-driven insights, and improved access to justice. Some of the most important advantages and disadvantages of using AI in the judicial system are given in Table 1.

Table 1. Advantages and disadvantages of the AI use court justice system

Advantages	Disadvantages
<i>AI-supported legal research and analysis</i>	
Efficiency and speed	Reliability and trust issues
Accuracy and consistency	Complexity and understanding
Enhanced search capabilities	Privacy and confidentiality concerns
Cost-effectiveness	Integration and adoption challenges
Comprehensive data analysis	Legal and ethical considerations
<i>AI for predictive policing</i>	
Crime prevention and resource allocation	Bias and discrimination
Data analysis and pattern recognition	Privacy and civil liberties concerns
Improved public safety	Reliability and accuracy
Cost-effectiveness	Ethical and legal challenges
Enhanced investigations	Community trust and relations
<i>AI for risk assessment in criminal justice</i>	
Rapid processing	Bias and fairness
Objective analysis	Transparency and accountability
Enhanced predictive accuracy	Over-reliance on technology
Resource optimization	Privacy and ethical concerns
Improved public safety	Implementation challenge
Scalability	

As the justice system continues to evolve, embracing AI technologies offers a powerful tool for efficiency, accessibility, and informed decision-making. Striking a harmonious balance between technological innovation and ethical considerations will be pivotal in shaping a justice system that is both technologically advanced and inherently just. The journey into this new era requires ongoing vigilance, collaboration, and a commitment to upholding the principles of fairness, transparency, and the rule of law.

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ВЕШТАЧКА ИНТЕЛИГЕНЦИЈА У СУДСКОМ ПРАВОСУДНОМ СИСТЕМУ

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Резиме

Употреба информационо комуникационих технологија несумњиво заузима најзначајније место у свакодневном животу и раду људи. Последњих година посебан акценат стављен је на вештачку интелигенцију као једну од области са тренутно најбржим развојем. Несумњива је чињеница да се алгоритми и принципи вештачке интелигенције не могу применити подједнако прецизно у свим областима људске делатности. Као једна од области све чешће примене издваја се судска пракса. Ово је можда једна од области где се примена вештачке интелигенције уводи са великом пажњом. Зависно од домена судске праксе, као и

домена и степена примене резултата добијених применом алгоритама вештачке интелигенције разликује се и даље учешће човека у доношењу одлука. Управо из ових разлога циљ овог рада био је сагледавање тренутног стања употребе вештачке интелигенције у судском правосудном систему широм света. Као једна од најчешћих области примене издваја се правно истраживање и анализа. На основу самог начина употребе и свега онога на чему се примена вештачке интелигенције базира истраживањем у правном домену сматра се прикупљање и обрада велике количине информација. Практично применом различитих метода могу се прикупити информације које су исте тематике као и случај на коме судије, приправници, адвокати, студенти права и остали судски запосленици раде. Примена оваквих метода доприноси убрзању у погледу процеса доношења одлука, јер се смањују напори запослених у погледу ручног претраживања и анализирања судских података и списка. Ово посебно долази до изражаја у судовима и правосудним системима у којима је обављена дигитализација података и судских списка. Поред тога, претрага и анализирање података доступних у дигиталним библиотекама постаје много приступачнија и бржа у односу на сате проведене у ручној претрази. Још једна од области примене јесте процена ризика и доношење одлука. Ова област примене сваким даном добија све више на значају, посебно у домену процене ризика. Неке од области процене ризика су непојављивање на суду, бегство, као и могућност понављања прекршајног или кривичног дела. Свака процена ризика базира се на предиктивним алгоритмима који се примењују над великим скупом историјских података, записника са суђења, демографских и социоекономских фактора, а све у циљу што ефикасније процене и доношења одлука. Када се ради о примени вештачке интелигенције у правосудном систему посебна пажња се посвећује етичким принципима и примени истих приликом доношења одлука. С тим у вези, постоји велики број аутора који изражава своје неслагање када се ради о доношењу одлука базираних искључиво на предиктивном закључку добивеном употребом вештачке интелигенције. Са друге стране, све већа употреба вештачке интелигенције у судској пракси широм света показује да бенефити употребе преовладавају.

POLICY FRAMEWORK EVALUATION OF CLIMATE CHANGE ADAPTATION IN THE REPUBLIC OF SERBIA

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Abstract

Climate change presents a pressing challenge today, intertwined with complex risks like natural hazards and ecosystem degradation, potentially endangering populations. The paper discusses the challenges posed by climate change in the Republic of Serbia, highlighting the need for improved awareness and readiness to plan and execute climate adaptation strategies. It covers various strategic frameworks and international agreements related to climate change adaptation, emphasising the country's alignment with global initiatives such as the Paris Agreement and the EU's Climate Change Adaptation Strategy. The analysis suggests the importance of enhancing institutional capacities, fostering collaboration, and prioritising comprehensive adaptation measures to effectively address the impacts of climate change in Serbia. It also underscores the need for the further development of multi-sectoral initiatives to effectively address climate risks in Serbia and ensure a sustainable future in the face of climate challenges.

Key words: climate change, climate policy, adaptation, strategic framework, Serbia.

ПРОЦЕНА ОКВИРА ПРАКТИЧНИХ ПОЛИТИКА ПРИЛАГОЂАВАЊА НА ИЗМЕЊЕНЕ КЛИМАТСКЕ УСЛОВЕ У РЕПУБЛИЦИ СРБИЈИ

Апстракт

Климатске промене данас представљају неодољан изазов који у садејству са комплексним ризицима попут природних опасности и деградације екосистема потенцијално угрожава становништво. Рад разматра изазове које климатске промене доносе Републици Србији, истичући потребу за унапређењем свести и спремности за планирање и спровођење стратегија прилагођавања климатским променама. Рад обухвата различите стратешке оквире и међународне споразуме везане за прилагођавање климатским променама, истичући усклађеност земље са глобалним иницијативама попут Париског споразума и Стратегије прила-

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гођавања климатским променама ЕУ. Анализа сугерише важност унапређења институционалних капацитета, подстицања сарадње и давања приоритета свеобухватним мерама прилагођавања ради ефикасног решавања утицаја климатских промена у Србији. Такође наглашава потребу за даљим развојем мултисекторских иницијатива ради ефикасног суочавања са климатским ризицима у Србији и обезбеђивања одрживе будућности пред изазовима климатских промена.

Кључне речи: климатске промене, климатска политика, прилагођавање, стратешки оквир, Србија.

INTRODUCTION

Climate change is a major challenge in today's world (Bulkeley & Nevell, 2015; Melidis & Russel, 2020). In conjunction with the complex climate risks, national governments are faced with the consequences of natural disasters, the destruction of ecosystems and the difficulties of socio-economic transition (Simpson, et al., 2021). Furthermore, these changes could potentially jeopardise the sustainability of certain population groups (Cifuentes-Faura, 2022). In addition, several ecosystems are threatened with extinction, and fires are becoming more frequent. Many countries are formulating strategies to mitigate the expected impacts (Huq, 2016). Within the EU, measures are being implemented to minimise the adverse effects on the environment, which impact human health and crucial biological processes like growth, reproduction, and the survival of early life stages.

In recent decades, a warming trend has been observed in Serbia, as in other European countries, characterised by an increase in temperatures, especially since the 1980s (Vuković, et al., 2018; Ruml, et al., 2017). This has led to remarkable changes in extreme weather patterns, manifested in more intense heat waves, heavy precipitation and droughts. The rate of temperature increase in Serbia exceeds the global average, with the average annual temperature rising by 0.36°C every ten years (Milutinović, 2023). The frequency of droughts has also increased. These rising temperatures, coupled with changes in precipitation patterns, have caused an increase in the frequency and intensity of heat waves, floods, forest fires, and disruptions in the overall ecosystem.

The European Green Deal of 2019 and the 2021 Recovery Plan for Europe demonstrate a strategic commitment to allocate a substantial 30% of the European Union's budget to address climate-related programs, projects, and initiatives, with provisions for non-EU member countries as well. This significant investment is intended to facilitate the implementation of measures aimed at adapting to the evolving climate landscape. However, the successful execution of these measures will necessitate complex reforms in legislative frameworks, strategic planning processes, implementation strategies, and monitoring systems. This research aims to

critically evaluate the Republic of Serbia's current institutional awareness of climate risks and its readiness to plan and execute climate adaptation strategies. The insights gained from this analysis can play a pivotal role in shaping Serbia's alignment with the EU's ambitious target of achieving carbon neutrality by 2050, and in effectively managing climate-related risks.

MATERIALS AND METHODS

The study aims to assess the level of awareness and preparedness of the public and institutions in Serbia in addressing the risks associated with current and future climate changes. To this end, an analysis was conducted on the existing strategic and legal framework for adapting to altered climate conditions to verify the hypothesis that the public sector in the Republic of Serbia has initiated the process of aligning with the readiness requirements for heightened risks of climate change impacts. Nonetheless, significant efforts are still required to advance climate change adaptation as a mainstream policy, particularly in terms of public awareness, notably among decision-makers in Serbia. The research is grounded in a case study methodology, employed to facilitate a more profound understanding of contemporary phenomena within their authentic contexts (Yin, 2009).

In conducting the analysis of the strategic and legal framework pertaining to climate change adaptation in Serbia, this study employed a qualitative approach. Data for this examination was sourced from official governmental publications, policy reports, and academic resources, offering a comprehensive perspective on the current framework. The gathered data underwent content analysis, facilitating a methodical assessment of the framework's components and structure. Official government documents, policy reports, and academic literature were systematically reviewed to extract relevant information regarding the framework. A comparative approach was employed to identify similarities and differences in the strategic and legal framework across different documents and sources.

STRATEGIC FRAMEWORK FOR ADAPTING TO CHANGING CLIMATE CONDITIONS IN THE REPUBLIC OF SERBIA

The Global Public Policies' Framework and Obligations of Serbia

The Republic of Serbia has signed some of the most important documents and initiatives related to climate change on both global and regional scales. In 2001, Serbia ratified the United Nations Framework Convention on Climate Change (UNFCCC), committing to integrating

climate change into planning processes and providing relevant information on greenhouse gas emissions.

The Paris Agreement, ratified by the Republic of Serbia on the 24th of August, 2017, mandates signatory states to implement measures aimed at ensuring that the global average temperature increase remains significantly below 2°C, while also striving to limit global warming to 1.5°C. Through its ratification of the Paris Agreement, Serbia has undertaken the commitment to periodically review and update its Nationally Determined Contributions. Additionally, it is obligated to engage in activities aimed at mitigating the risks of natural disasters and adapting to changing climate conditions, and to provide reports on these endeavours. Furthermore, there are requirements for monitoring and reporting in accordance with the UNFCCC and regional initiatives.

For the first time, the Paris Agreement establishes a legal obligation to adapt to changing climate conditions and provides the legal foundation for the development of national adaptation plans/programs. Additionally, it mandates reporting on priorities, plans, activities, and necessary assistance in this domain through a public international registry. Article 7 of the Paris Agreement outlines the global adaptation goals of strengthening adaptive capacity, resilience, and reducing vulnerability to climate change. These aims are intended to contribute to sustainable development and ensure an appropriate response in terms of adaptation to the specified temperature increase limitation goals.

Ultimately, Serbia's future accession process will necessitate close collaboration with the EU to fulfil obligations outlined in Chapter 27 and implement the National Approximation Strategy for environmental matters. The new EU Strategy for Adaptation to Climate Change (European Commission, 2021), established in 2021 as an update to the 2013 EU Strategy, requires member states to adopt comprehensive national strategies and allocate financial resources for adaptation efforts. This includes strengthening national adaptive capacities, with a specific focus on establishing an effective system for monitoring, reporting, and evaluation. The strategy is guided by four primary objectives: making adaptation more intelligent, expeditious, and systemic; enhancing international efforts in adapting to changing climate conditions; and emphasising the establishment of an efficient adaptation system at the local level through the Covenant of Mayors for Climate and Energy initiative¹. Notably, in 2018, adaptation to changing climate conditions was integrated into EU legislation, with obligatory implementation from 2021 through Regulation (EU) 2018/1999 (European Commission, 2018), mandating biennial reporting on adaptation programs and strategies. This reporting encompasses vari-

¹ <https://www.ccre.org/activites/view/3>

ous aspects, including climate scenarios, extremes, impacts of climate change, vulnerability, and risks, as well as the capacity for adaptation, monitoring, evaluation, progress in implementation, best practices, and governance changes. Furthermore, the Regulation stipulates the inclusion of an analysis of the influence of changing climate conditions on energy supply security in the National Energy and Climate Plans (NECP), particularly focusing on water availability for energy production facilities and biomass availability.

In order to accomplish the aforementioned tasks, it is imperative to develop and construct a comprehensive framework at the national level, while also continuing efforts to enhance the capacities of national institutions, especially at the local level. Adaptation to changing climate conditions is established as a global challenge faced by all at the local, national, regional, and global levels, and is recognised as a key component contributing to the long-term global response to climate change, with the aim of safeguarding individuals, livelihoods, and ecosystems. In accordance with the proposed European Union Climate Law, climate neutrality will have implications for the EU's bilateral relations and accession negotiations with candidate countries, which are expected to initiate societal transformations in alignment with this framework.

The proposal of the European Climate Law forms the basis for heightened ambition and policy coherence in adaptation, establishing a framework to attain climate neutrality and adaptation aspirations by 2050. It integrates the internationally agreed vision of action, encompassing the global adaptation goal outlined in Article 7 of the Paris Agreement and Sustainable Development Goal 13. The proposal entails a continuous progression for the EU and its member states to fortify adaptation capacities, bolster resilience, and diminish vulnerability to climate change. On the 24th of February, 2021, the European Commission endorsed the Communication titled “A Climate-resilient Europe: the new EU strategy on adaptation to climate change” (European Commission, 2021). This strategy envisions the EU as a society resilient to climate change and fully adapted to its inevitable impacts by 2050. Its primary objective is to enhance adaptation capacities within the European Union and globally, while minimising vulnerability to climate change and its impacts in alignment with the Paris Agreement. Furthermore, on the 29th of September, 2021, the European Commission established five EU missions (European Commission, 2021a) dedicated to addressing significant societal challenges, including adaptation to climate change. Each mission encompasses a portfolio of actions, such as research projects, policy measures, and legislative initiatives, to achieve measurable goals that cannot be realised through individual actions. The “Adaptation to Climate Change” mission concentrates on solutions and preparedness for the impact of cli-

mate change to safeguard lives and property, incorporating behavioural and social dimensions to facilitate societal transformation.

Considering that the Western Balkans is one of the European regions most affected by the impacts of climate change, with projections indicating that this trend will continue and estimates of a temperature increase of 1.7 to 4.0°C, possibly even exceeding 5.0°C by the end of the century, the Green Agenda for the Western Balkans (European Commission, 2020) envisions climate action as one of its five pillars, encompassing decarbonisation, energy, and mobility.

Strategic Framework of the Republic of Serbia

The national climate change adaptation public policy framework comprises a multitude of public policy documents, including strategies and programs, which have either been formally adopted or are currently in the process of being developed. These documents offer comprehensive regulation of various issues, and delineate measures and activities within specific domains.

The Law on Climate Change (“Official Gazette of the Republic of Serbia,” No. 26/21) serves as the cornerstone for public policies and initiatives concerning climate change. It establishes a framework for planning, implementing, and updating policies and measures in the field of climate change adaptation. Additionally, the Law on Climate Change provides the foundation for planning, updating, and implementing strategies, measures, and activities related to adapting to changing climate conditions. The enactment of the Law on Climate Change brings about beneficial impacts on Serbia’s capabilities to address climate change, as it introduces legal oversight in an area not covered by existing laws. Nevertheless, the Law requires the adoption of numerous subordinate regulations essential for enforcing its provisions, such as guidelines on greenhouse gas emission levels from national sources (Božanić, Kukulj, & Popović, 2024). As a result, the actual implementation of this Law is delayed until these subordinate regulations are put into effect. Additionally, a significant concern arises from the fact that the Law on Climate Change lacks provisions for funding climate initiatives, including those comparable to the EU ETS system.

The law delineates the specific responsibilities assigned to local self-government bodies and the local administrative level, emphasising the necessity of instituting a comprehensive reporting system to oversee and track the execution of climate policies at the local level. This pivotal duty underscores the significance of local engagement and accountability in addressing climate challenges effectively. However, the fulfilment of these essential obligations has been delayed, leaving local self-governments without the necessary frameworks and support systems to adhere to the requirements detailed in this legislation. As a result, the cru-

cial task of adequately preparing and empowering local authorities to meet the mandates of the law remains unaddressed. Furthermore, the absence of well-defined programs for the distribution of pertinent information and the enhancement of capacities within various levels of local government further complicates the effective implementation of climate-related initiatives at the local level.

The comprehensive analysis of the climate change policy landscape resulted in the recognition of 19 distinct climate change adaptation policies formulated during the period spanning from 2006 to 2023. These policies encompass a dual focus on both adaptation and mitigation measures; however, this study primarily delves into policies pertinent to adaptation interventions. Furthermore, the delineation of policy levels was delineated into two categories: national and local. The findings of this study reveal that among the identified 19 climate policies, 12 are situated at the national level (Figure 1), including 8 sector-specific policies, with only 6 tailored for cities and municipalities, while a solitary national policy was exclusively designed for the local level.

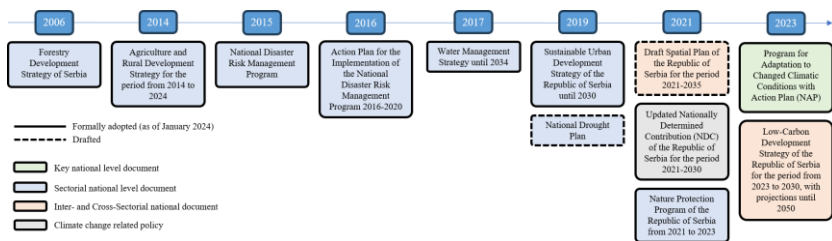


Figure 1. National climate change and sectoral policies of relevance to adaptation in Serbia

At the national level, the primary strategies and programs for climate change adaptation encompass a range of documents, including the 2023-2030 Climate Change Adaptation Programme (NAP) (The Government of the Republic of Serbia, 2023), the Draft Spatial Plan of the Republic of Serbia for the period 2021-2035 (Ministry of Construction, Transport and Infrastructure of the Republic of Serbia, 2021), and the Updated Nationally Determined Contribution (NDC) of the Republic of Serbia for the period 2021-2030², which was submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in 2022. Additionally, the Low-Carbon Development Strategy of the Republic of Serbia for the period from 2023 to 2030, with projections until 2050 (The Government of the Republic of Serbia, 2023), along with various sectoral

² https://unfccc.int/sites/default/files/NDC/2022-08/NDC%20Final_Serbia%20english.pdf

strategies such as the Sustainable Urban Development Strategy of the Republic of Serbia until 2030 (The Government of the Republic of Serbia, 2019), the Agriculture and Rural Development Strategy for the period from 2014 to 2024 (The Government of the Republic of Serbia, 2014), the Forestry Development Strategy of Serbia (The Government of the Republic of Serbia, 2006), and the Water Management Strategy until 2034 (The Government of the Republic of Serbia, 2017), among others, are integral components.

The NAP, adopted recently in response to the commitments made by the Republic of Serbia through the Paris Agreement and the Climate Change Law, aims to increase resilience to climate change for the well-being of people, the economy, and the environment. It is aligned with the principles of the European Union Climate Change Adaptation Strategy adopted in 2021. The program defines a general goal and four specific objectives: (1) increase awareness, and improve the knowledge and understanding of the impacts of climate change and its consequences; (2) establish and strengthen capacities for the systematic implementation of adaptation processes at national and local levels; (3) enhance the resilience of critical infrastructure and natural resources to climate change; and (4) improve financial support for the implementation of adaptation processes to changing climate conditions.

Asserting the inadequacy of capacities for planning, executing, and overseeing the implementation of measures to adapt to evolving climate conditions in the Republic of Serbia, especially at the local level, the Program emphasises, as one of its specific objectives, the establishment and enhancement of these capacities. It explicitly underscores the significance of the local level in this endeavour. The implementation of the NAP is anticipated to be a pivotal element in establishing a framework for the development and execution of public policies, interlinking key sectoral actions. It will also serve as a bridge to other multi-sectoral initiatives, such as the 2015 National Disaster Risk Management Program (Ministry of the Public Investment of the Republic of Serbia, 2015), and the Action Plan for the Implementation of the National Disaster Risk Management Program 2016-2020 (Ministry of the Public Investment of the Republic of Serbia, 2016).

While the majority of national strategies and programs recognise policies and measures for climate change adaptation, particularly those of more recent origin, most sectoral strategic and regulatory documents contain only indirect and fragmented references to climate change adaptation (Figure 2). Aside from the NAP, a limited number of sectoral public policy documents specifically delineate the domain of adaptation to changing climate conditions. These include the Low Carbon Development Strategy

	Forestry Development Strategy of Serbia	Agriculture and Rural Development Strategy for the period from 2014 to 2024	National Disaster Risk Management Program	Energy development strategy of the Republic of Serbia until 2030	Tourism Development Strategy of the Republic of Serbia 2016 - 2025	Water Management Strategy until 2034	Public Health Strategy 2018 - 2026	Sustainable Urban Development Strategy of the Republic of Serbia	National Drought Plan*	Industrial policy strategy of the Republic of Serbia	Draft Spatial Plan of the Republic of Serbia for the period 2021-2035*	Updated Nationally Determined Contribution (NDC) of the Republic of Serbia for the period 2021-2023	Nature Protection Program of the Republic of Serbia from 2021 to 2023	Program for Adaptation to Changed Climatic Conditions with Action Plan (NAP)	Law on Environmental Strategy of the Republic of Serbia for the period from 2023 to 2030, with projections until 2050
	2006	2014	2015	2015	2016	2017	2018	2019	2019	2020	2021	2022	2021	2023	2023
Climate change impacts															
Natural resources															
Socio-economic sectors															
Extreme events															
Infrastructure															
Water availability															
Damage from water															
Agriculture															
Health															
Biodiversity															
Energy															
Forestry															
Transport															
Environmental issues															
Sanitation															
Urban environment															

- Climate change adaptation policy frames fully available
- Climate change adaptation policy frames partially available
- Vulnerability analysis is missing
- Specific CCA measures are missing
- Policy framework not connected with CC adaptation
- * Draft, not yet adopted

Figure 2. Key climate change adaptation policy frames in national public policy documents in Serbia

of the Republic of Serbia for the period from 2023 to 2030 (The Government of the Republic of Serbia, 2023), the Nature Protection Program of the Republic of Serbia from 2021 to 2023 (The Government of the Republic of Serbia, 2021), and the Sustainable Urban Development Strategy of the Republic of Serbia until 2030 (The Government of the Republic of Serbia, 2019). The Draft Spatial Plan of the Republic of Serbia from 2021 to 2035 is largely aligned with the requirements for adapting to changing climate conditions and, thus, stands out from the overall strategic planning regulations of Serbia. It focuses on adapting to climate change, emphasising sustainable practices, the protection of natural resources, and enhancing resilience to environmental pressures. It aims to halt agricultural land occupation, promote afforestation for degraded areas, and in-

vest in eco-friendly irrigation and drainage systems for flood protection. Additionally, the plan emphasises conservation methods, erosion protection, biodiversity enhancement in forests, and the development of water supply and hydro-energy systems. The Updated Nationally Determined Contribution (NDC) of the Republic of Serbia for 2021-2030 addresses adaptation in water, agriculture, and forestry sectors, highlighting specific adaptation measures that have co-benefits with mitigation. Forestry strategies include afforestation, forest management improvements, and climate-resilient tree species selection, while water sector actions involve flood management, early warning systems, and enhancing water storage capacity. The Sustainable Urban Development Strategy of the Republic of Serbia until 2030 also focuses on adapting to climate change, establishing response systems in urban areas, and strengthening institutional capacities for urban development planning to ensure environmental protection and life safety. The Low-Carbon Development Strategy of the Republic of Serbia for the period from 2023 to 2030, with projections until 2050 acknowledges the impact of climate change on sustainable development and highlights the country's commitments to international agreements necessitating a shift towards a low-carbon economy. This strategy sets out two key goals focused on preserving mitigation measures and enhancing resilience to climate change by 2030 and 2050, as well as promoting the transition to a climate-neutral economy and a society prepared for climate challenges. The Nature Protection Program from 2021 to 2023 in the Republic of Serbia acknowledges the direct negative impact of climate change on nature, highlighting the limited collaboration among researchers, policymakers, and stakeholders in climate change and biodiversity sectors. It identifies the absence of systematic monitoring of climate change effects on biodiversity and insufficient models for projecting these impacts, alongside a lack of public awareness regarding the interplay between climate change and biodiversity. The Program sets a measure to establish the monitoring of climate change impacts on biodiversity and biodiversity's role in mitigating climate change effects under Special Goal 1.1, with specific activities outlined in the Action Plan managed by the Ministry of Environmental Protection. The Water Management Strategy for the Republic of Serbia until 2034 outlines long-term directions for water management, but lacks a comprehensive coverage of direct climate change impacts on water resources. Climate change is acknowledged in the document as a significant factor affecting water resources, particularly in relation to flood protection and drought considerations for future water policies. Additionally, the Strategy sets an Operational Goal 1, focused on managing water during drought conditions and water scarcity, outlining specific measures to reach this objective. The Agriculture and Rural Development Strategy for the period from 2014 to 2024 includes considerations of climate change and envisages adaptation measures at the level of

producers/farms and the agriculture sector as a whole. Although the preparation did not utilise results from various climate change scenarios and derived indicators, the strategy contains a more or less detailed list of indicators for measuring progress in this area, as well as rather unclear financial frameworks for policy implementation. The Forestry Development Strategy of Serbia recognises the role of forests in mitigating climate change, but it does not go much further than that. The Public Health Strategy in the Republic of Serbia for the period 2018-2026 outlines efforts to enhance health and reduce health disparities, including addressing environmental conditions and responding to climate change, as well as creating action plans to tackle climate change in urban areas. Despite mentioning activities to assess health risks from environmental factors and climate change, these crucial efforts are not explicitly acknowledged in either the strategy or the action plan. The Energy Development Strategy of the Republic of Serbia until 2025, with projections until 2030 fails to consider the influence of climate change on the energy sector and forestry, potentially hindering the set objectives for utilising wood biomass for energy production. Moreover, the Strategy overlooks opportunities to integrate traditional infrastructure with natural solutions for more efficient energy production and consumption, neglecting to alleviate environmental impacts caused by the sector. Finally, the National Disaster Risk Management Program lacks a direct consideration of measures and policies regarding adaptation to changing climate conditions, creating challenges in coordinating adaptation activities with disaster risk reduction efforts, mobilising resources, and managing financial expenses.

At the local level, a limited number of municipalities developed local climate adaptation policy documents. In 2015, the city of Belgrade developed “Climate Change Adaptation Action Plan and Vulnerability Assessment” (City of Belgrade, 2015). The association of local governments in Serbia (Standing Conference of Cities and Municipalities - SCTM), supported by international assistance, developed in 2018 a distinctive methodological framework for planning local adaptation measures (Milutinović, Priručnik za planiranje prilagođavanja na izmenjene klimatske uticaje u lokalnim zajednicama u Srbiji, 2018). The methodology was tested in the Vojvodina Autonomous Province’s City of Bečej, where the local climate change adaptation plan was formally adopted. Three local self-governments (the cities of Kraljevo, and Zrenjanin, and Ub municipality) created Local Action Plans on Climate Change Adaptation and Resilience with assistance from the United Nations Development Program (UNDP). Lastly, as part of the “Cities and Climate Change Program” project, implemented by the Ministry of Environmental Protection of the Republic of Serbia and funded by the French Development Agency, the City of Smederevo created an Action Plan for Adaptation to Climate Change in 2022.

CONCLUSIONS

The analysis provides a comprehensive overview of various public policy frameworks and strategies related to climate change adaptation and mitigation in the Republic of Serbia. It highlights the country's commitments to international agreements such as the Paris Agreement and the United Nations Framework Convention on Climate Change, emphasising the need for systematic monitoring of climate change impacts and the development of adaptation plans. The analysis also highlights the importance of enhancing collaboration among stakeholders, increasing public awareness, and aligning national strategies with EU directives for climate adaptation and resilience.

It is evident that Serbia has made significant strides in aligning its policies with global climate agreements and recognising the importance of adapting to changing climate conditions. However, there are areas that require further attention, such as enhancing capacities at the local level, improving coordination between adaptation and disaster risk reduction efforts, and increasing public engagement in climate-related initiatives. Therefore, it is recommended that Serbia continues to prioritise the implementation of comprehensive adaptation measures, strengthen institutional capacities, and foster multi-sectoral collaboration to effectively address the challenges posed by climate change.

ACKNOWLEDGEMENT: This paper is a part of the research funded by the Ministry of Science, Technological Development and Innovation of the Republic of Serbia pursuant to the agreement No. 451-03-66/2024-03/200148. Part of this paper is based upon work from the COST Action "CA20138: Network on water-energy-food nexus for a low-carbon economy in Europe and beyond – NEXUSNET", supported by COST (European Cooperation in Science and Technology).

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ПРОЦЕНА ОКВИРА ПРАКТИЧНИХ ПОЛИТИКА ПРИЛАГОЂАВАЊА НА ИЗМЕЊЕНЕ КЛИМАТСКЕ УСЛОВЕ У РЕПУБЛИЦИ СРБИЈИ

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Резиме

Климатске промене данас представљају значајан глобални изазов, утичући на различите аспекте попут природних катастрофа, уништавања екосистема и социо-економских транзиција. Тренд загревања који се примећује у Србији током последњих деценија довео је до значајних промена у временским обрасцима, што је проузроковало екстремније топлотне таласе, обилније падавине и чешће и дуготрајније суше. То је захтевало предузимање мера за ублажавање ових ефеката у складу са глобалним напорима попут Европског зеленог споразума. Успешно спровођење ових мера захтева реформу у законодавству, планирању, спровођењу и системима праћења.

Рад процењује свест и спремност Србије у суочавању са тренутним и будућим ризицима климатских промена. Користи квалитативан приступ анализом постојећих стратешких и правних оквира који се односе на прилагођавање климатских променама. Подаци из званичних владиних публикација, извештаја о политици и академских ресурса пружају свеобухватан приказ тренутног оквира Србије за прилагођавање измењеним климатским условима.

Србија је ратификовала важне међународне споразуме попут Оквирне конвенције Уједињених Нација о климатским променама и Париског споразума, обавезавши се да интегрише разматрања о климатским променама у процесе планирања и имплементације. Париски споразум налаже земљама да спроводе мере за ограничавање глобалног загревања и јачање адаптивних капацитета. У ЕУ се врше значајна улагања у програме везане за климу, истичући важност праћења, извештавања и евалуације. Будуће приступање Србије ЕУ захтеваће усклађеност са стратегијама ЕУ за прилагођавање измењеним климатским условима и унапређење отпорности на климатске промене.

Приметан је напредак у усклађивању националних политика Републике Србије са глобалним климатским споразумима, али су неопходни даљи напори усмерени ка јачању капацитета на националном и локалном нивоу, унапређењу координације између активности прилагођавања и смањење ризика од катастрофа и повећању ангажовања јавности у иницијативама везаним за климу. Анализа истиче значај унапређења институционалних капацитета, подстицања сарадње и давања приоритета свеобухватним мерама прилагођавања како би се ефикасно супротставили утицајима климатских промена у Србији. Препоручује се да Србија настави са давањем приоритета свеобухватним мерама прилагођавања, јачањем институционалних капацитета и промовисањем мултисекторске сарадње, како би ефикасно сузбила изазове климатских промена.

CONCEPTUAL ISSUES OF PUBLIC OFFICIALS ACCOUNTABILITY: RESEARCH CONDUCTED IN LOCAL SELF-GOVERNMENT UNITS IN THE REPUBLIC OF SERBIA

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Abstract

Public integrity, transparency and accountability have been identified as part of the founding principles of the public sector which should be enacted in legislation and applied consistently in practice. Effective implementation of the accountability principle shall underpin integrity of public service and its legal, professional and transparent operation.

The purpose of the paper is to analyze conceptual issues of public officials' accountability, focusing on disciplinary responsibility and application in practice. The paper also presents the results of the research conducted in 30 local self government units in the Republic of Serbia. The results point out the (non)efficient implementation of legal and ethical rules and values concerning disciplinary procedures, sanctions, performance appraisal system in the context of possible improvements and capacity building. In order to enhance public integrity, appropriate legislative and institutional frameworks must be in place to enable public-sector organizations to take responsibility for effectively managing the integrity of their activities, as well as that of the public officials who carry out those activities.

Key words: public officials, disciplinary liability, integrity, local self-government, public interest.

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КОНЦЕПТУАЛНА ПИТАЊА ОДГОВОРНОСТИ ЈАВНИХ СЛУЖБЕНИКА: ИСТРАЖИВАЊЕ СПРОВЕДЕНО У ЈЕДИНИЦАМА ЛОКАЛНЕ САМОУПРАВЕ У РЕПУБЛИЦИ СРБИЈИ

Апстракт

Јавни интегритет, транспарентност и одговорност идентификовани су као део темељних принципа јавног сектора који треба да буду усвојени у законодавству и доследно примењивани у пракси. Ефикасна имплементација принципа одговорности биће основа интегритета јавне службе, њеног законитог, професионалног и транспарентног рада. Сврха рада је анализа концептуалних питања одговорности јавних службеника са фокусом на дисциплинску одговорност и примену у пракси. У раду су представљени и резултати истраживања спроведеног у 30 јединица локалне самоуправе у Републици Србији. Резултати указују на (не)ефикасну примену правних и етичких правила и вредности у вези са дисциплинским поступцима, санкцијама, системом оцењивања рада у контексту могућих побољшања и изградње капацитета. Да би се побољшао јавни интегритет, мора се осигурати да постоје одговарајући законодавни и институционални оквири који ће омогућити организацијама јавног сектора да преузму одговорност за ефикасно управљање интегритетом својих активности, као и интегритетом јавних службеника који спроводе те активности.

Кључне речи: јавни службеници, дисциплинска одговорност, интегритет, локална самоуправа, јавни интерес.

INTRODUCTION

Respect for the principle of accountability has always been a clear indicator that legality, openness, and transparency are respected in a particular legal system. (Vučetić, Vukašinović-Radojčić & Krstić-Mistredželović, 2019, p.128). Following the standards of the European Union (The Principles of Public Administration), the principle of accountable and professional public servant work is one of the essential principles of administration (SIGMA OECD, 2023).

In the administrative-legal sense, state and public administration employees have concrete responsibilities that are ensured through complex procedures. All powers and duties aim only at the public interest, balanced with the rights and obligations of the parties on which they decide, and not for the benefit of the person performing the service. Only the necessary and goal-proportional activity of public officials can ensure respect for citizens' basic rights and promote efficient and effective governance in the public sector. This promotes the principle of accountability and establishes standards for evaluating the adequacy of administrative decisions and procedures (Lončar & Vučetić, 2013).

The specifics of employees' legal positions, the scope, and the types of administrative powers determine the specific forms and basic assumptions of their accountability—disciplinary, material, or criminal law

accountability. The concept of disciplinary accountability is not particularly controversial in the legal literature. This type of accountability is specific since it arises from the official's legal position as the totality of their rights, obligations, and powers. (Vukašinović-Radojčić, 2015, p.69) Failure to fulfill work obligations is grounds for initiating disciplinary proceedings and imposing sanctions (reprimand, salary reduction, promotion ban, termination of employment). (Vukašinović-Radojčić & Vučetić 2021, p.112).

In the official systems of the European Union member states, disciplinary accountability in the theoretical and positive legal sense is determined as the official's accountability for violations of duties from the employment relationship that are explicitly prescribed by law and for which appropriate sanctions are established (Bezeriță, 2018, p.21). In the French system, disciplinary accountability exists when a civil servant's behavior threatens the administration's good functioning or reduces citizens' and the public's trust in its work. (European Union, European Social Fund, 2020). This official system knows "management accountability" and "personal accountability of officials," which aims to strengthen personal accountability against management's general accountability for (in)action and thus protect officials from the financial consequences of (in)action (Cardona, 2003).

The regime of accountability of employees in local self-government units in the Republic of Serbia is largely aligned with the rules of the general regime of civil servants, which is in line with the trend of developing a coherent and harmonized civil service system.

The specificities and differences result from the needs at the local community level, the regulation of the original powers of local self-government units, as well as specific jobs and tasks. This autonomy implies special accountability for efficient resource management and innovative and responsible solving of specific community problems. In this sense, local officials face increased expectations in terms of transparency, accessibility, and interaction with citizens. This requires developing effective communication channels and mechanisms for involving the public in the decision-making processes. Such interaction helps build trust and legitimacy in the local administration but it increases officials' accountability to fulfill the community's promises and expectations.

Disciplinary accountability, a form of legal accountability, is a function of public officials' accountable and professional work. In local self-government units, the rules of disciplinary responsibility are regulated by the Law on Employees in Autonomous Provinces and Local Self-Government Units. (Закон о запосленима у аутономним покрајинама и јединицама локалне самоуправе, 2016). This Law is largely in accordance with the provisions of the Law on Civil Servants (Закон о државним службеницима, 2005) in this segment, which strengthens the coherence of the civil service system. However, differences can be ob-

served, primarily regarding the classification (determination) of duties violations from employment relationships. For example, the Law on Civil Servants prescribes as a minor violation of official duty "frequent tardiness, unjustified absence during working hours or early departure from work", (Закон о запосленима у аутономним покрајинама и јединицама локалне самоуправе, 2016, чл. 138.) while the Law on Employees in Autonomous Provinces and Local Self-Government Units defines this violation more precisely that it exists "if the employee is late for work three or more times in a period of two consecutive months or six days in a period of twelve consecutive months, i.e., he is absent during working hours or leaves work earlier in the same time frames" (Закон о запосленима у аутономним покрајинама и јединицама локалне самоуправе, 2016, чл. 139.). In this way, the possibility of arbitrary interpretation of specific actions representing an element of breach of official duty is suppressed.

On the other hand, according to the Law on employees in autonomous provinces and local self-government units, the procedure is initiated by the employer, on his/her initiative or at the suggestion of a person who is the employee's immediate supervisor. The procedure is led and decided on by the employer, with the fact that in the case of minor violations of work duties, he/she is not obliged to appoint a committee. On the other hand, there is an obligation to educate the committee in the case of more severe injuries (Закон о запосленима у аутономним покрајинама и јединицама локалне самоуправе, 2016, чл. 143-144.).

Given that the employer is a legal entity, the question arises as to who is specifically authorized to initiate and conduct disciplinary proceedings in local self-governments. Is this issue completely left to the employer's will, that is, the local self-government? In order to determine the situation in the area of accountability of officials in local self-government units, a survey was conducted, which included a description of initiated and completed procedures, violations of official duties, types of disciplinary measures imposed, violations of the rules of ethical codes, consequences and responsibility for not achieving work goals through the procedure assessments, responsibility for protection and other issues. The ultimate goal is to determine the application of the rules on official accountability and the effectiveness of the officials' work and make proposals for improvement.

METHODS

The research was conducted through a research instrument, using a request for access to information of public importance sent by e-mail to local self-government units. 30 units of local self-government in the

Republic of Serbia were covered.¹ The time frame of the research covers a period of three years - 2020, 2021 and 2022. The questions covered by the research instrument are as follows:

1. What was the number of disciplinary proceedings initiated and completed against local officials and employees in your local self-government in 2020, 2021, and 2022?
2. Specify the types of duty violations from the employment relationship (less severe and and more severe) that led to the initiation of disciplinary proceedings in 2020, 2021, and 2022.
3. Number and types of disciplinary measures imposed in 2020, 2021 and 2022.
4. The number of obsolete disciplinary procedures - separately for initiation and separately for conducting the procedure, in 2020, 2021, and 2022.
5. Were there any violations of the provisions of the Code of Conduct for local officials and employees in 2020, 2021, and 2022?
6. If the provisions of the Code were violated, what types of violations were involved, and what sanctions were imposed?
7. Has the Code of Ethics for local self-government officials been adopted?
8. How many local employees were rated as "outstanding", "good", "satisfactory", and "not satisfactory" as a percentage of the total number of employees in 2020, 2021, and 2020?
9. If there were evaluations with the grades "unsatisfactory" and "satisfactory", did the consequences of determining the evaluation occur by Article 133 of the State Law on Employees in Autonomous Provinces and Local Self-Government Units?
10. In 2020, 2021, and 2022, was the employee's responsibility determined for the damage caused to the employer?
11. In 2020, 2021, and 2022, was the employee's liability for damage caused to a third party determined? In that case, did the employer demand compensation for the damage from the employee?

The research included 30 local self-government units (cities, municipalities) as follows:

Novi Beograd, Zvezdara, Palilula, Vranje, Svrljig, Smederevo, Čajetina, Prijepolje, Zajčar, Novi Pazar, Kraljevo, Pančevo, Subotica, Vrbas, Vlasotince, Pirot, Kruševac, Čičevac, Bačka Palanka, Požarevac, Loznica, Vršac, Trstenik, Niš, Užice, Bor, Valjevo, Bujanovac, Kragujevac, Šabac.

¹ The three city municipalities, Novi Beograd, Palilula, and Zvezdara, are not local self-government units.

RESULTS

The results of the initiated disciplinary proceedings in 2020, 2021, 2022 in selected local self-government units are as follows:

Table 1. Number of initiated and completed disciplinary proceedings

Local governments	year 2020		year 2021		year 2022	
	Initiated	Completed	Initiated	Completed	Initiated	Completed
1. Novi Beograd	/	/	/	/	2	1
2. Zvezdara	/	/	/	/	/	/
3. Palilula	/	/	/	/	/	/
4. Vranje	2	2	9	8	6	5
5. Svrlijig	/	/	/	/	1	1
6. Smederevo	1	1	1	1	/	/
7. Čajetina	/	/	/	/	/	/
8. Prijepolje	/	/	/	/	3	/
9. Zaječar	/	/	6	/	/	1
10. Novi Pazar	/	/	2	2	2	/
11. Kraljevo	/	/	2	2	1	1
12. Pančevo	2	2	1	1	1	1
13. Subotica	/	/	1	1	1	1
14. Vrbas	/	/	/	/	/	/
15. Vlasotince	/	/	/	/	/	/
16. Pirot	/	/	/	/	/	/
17. Kruševac	2	2	/	/	/	/
18. Čičevac	2	/	/	/	/	/
19. Bačka Palanka	/	/	/	/	/	/
20. Požarevac	/	/	/	/	/	/
21. Loznica	1	1	/	/	1	1
22. Vršac	/	/	/	/	/	/
23. Trstenik	/	/	1	/	/	1
24. Niš	/	/	/	/	/	/
25. Užice	/	/	/	/	/	/
26. Bor	/	/	/	/	/	/
27. Valjevo	/	/	/	/	/	/
28. Bujanovac	2	/	/	2	/	/
29. Kragujevac	3	3	/	/	1	/
30. Šabac	/	/	/	/	/	/

Source: Data obtained from local self-government units

The research results indicate the types and severity of disciplinary violations that initiated proceedings and imposed disciplinary measures. In the city municipality of Novi Beograd, in 2022, two disciplinary proceedings were commenced for minor violations of official duty, of which only one was concluded. A fine of 5% of the employee's basic salary was imposed. No more precise data was provided on which specific minor injuries were involved.

The city of Vranje stands out, particularly in terms of the number of initiated disciplinary procedures. In 2020, two disciplinary proceedings were initiated for severe violations of official duty. One was suspended, and the official was released from disciplinary responsibility in the other. In 2021, 9 proceedings were initiated, 8 were concluded, 7 were for serious violations of official duties, and 2 were for minor violations. The proceedings ended by suspending two cases, releasing the official from responsibility in one case, and imposing fines in five cases. In 2022, 6 disciplinary proceedings were initiated, 5 of which were completed, and 1 proceeding is ongoing, and that is due to 6 more serious disciplinary acts, of which 5 persons were fined. Disciplinary offenses committed in the local self-government of the city of Vranje were as follows: a) minor - being late for work three or more times and leaving work early, and the penalty imposed is 20% of the basic salary for the month in which the violation was made and b) more serious - non-fulfillment of work obligations, negligent, untimely execution of tasks and orders of the superior and inappropriate and offensive behavior towards parties and associates. The penalties included a suspension of 20% of salary for 3 months and a suspension of 30% of salary for up to 6 months.

In 2022, the municipality of Svrlijig initiated a disciplinary procedure for a serious violation of official duty, after which a fine of 20% of the basic salary for the month of August was imposed. Furthermore, in the city of Smederevo, in 2021 and 2022, one disciplinary procedure was initiated, each due to severe violations of official duty, namely inappropriate, violent, or offensive behavior toward parties or associates, illegal disposal of funds, and negligent attitude towards funds handled by the official. The procedures have not been completed, so their outcomes are unknown. In Prijepolje, 3 disciplinary proceedings were initiated in 2022 due to severe violations of official duty, which were not concluded, and one was terminated due to the death of an official. In Zaječar, 6 disciplinary procedures were initiated, of which only one was terminated, with a decision to suspend the procedures. In one case, the procedure became obsolete, but the employee's employment was terminated before the deadline for completing the disciplinary procedure. More severe violations of duties referred to unjustified absence from work for at least two consecutive working days, non-execution, negligent, untimely, or incomplete execution of tasks or orders of a superior, and illegal work, i.e. ille-

gal production of the official documentation, incorrect or otherwise improper processing of the same, or omission of actions for which the employee was authorized, which resulted in the employer's responsibility or the occurrence of damage. The city administration of the city of Novi Pazar initiated 2 disciplinary proceedings for severe and minor violations of official duty during the observed period, both of which were concluded. More serious violations related to inappropriate, violent, or offensive behavior towards parties and associates and the officer, who did not report a criminal offense that he found out about in the course of his official duties, as well as because he refused the order of the Head of the Department to report a criminal offense and act according to the letter from the Ministry of Labour, Employment, Veterans and Social Affairs. In the observed period, the city administration of the city of Kraljevo initiated and ended three disciplinary proceedings due to severe violations of official duty. After that, two fines of 25% of the salary for six months were imposed, and another was transferred to a workplace in an immediately lower rank. In Pančevo, 4 disciplinary proceedings were initiated due to severe injuries during the observed research period. The proceedings ended with the imposition of a fine (not specified), one of which was suspended due to the termination of the employee's employment relationship. In one case, the employee was released from responsibility.

From 2020-2022, two disciplinary proceedings were initiated in Subotica one for a minor and one for a severe violation of official duty, which was not specified. The employee was dismissed for the more severe violation. The employee was dismissed for the more severe violation“

The employee was terminated for the more severe violation. In the local self-government of the city of Kruševac, in 2020, two disciplinary proceedings were initiated, one for a minor and the other for a severe violation of official duty. In the first case, an unjustified absence from work for one working day, the employee was fined 5% of the basic salary paid for the month in which the decision became final. In another case, the employee was acquitted due to lack of evidence. Namely, this procedure was initiated because the employee was suspected of using an electronic attendance record card in someone else's name without authorization, typing another person into the electronic attendance record machine, thereby presenting false circumstances, which are the basis for exercising rights from the employment relationship, which represents a violation of Article 138, point of the Law on Employees in Autonomous Provinces and Local Self-Government Units. What is specific is that the decision rationale does not explain how the evidentiary procedure went or on which basis the employee was acquitted. It only stated that the employee was recorded in the chronology of arrivals on that day and that there was no evidence that someone was typing her attendance for her. In 2020, two disciplinary proceedings were initiated in Čičevac due to a severe viola-

tion of official duty, i.e., non-execution, unconscionable, untimely, or negligent execution of tasks or orders of a superior. The statute of limitations has been set for conducting these proceedings. In Loznica, two proceedings were initiated and concluded during the observed period of severe violations of work duties. The first case involved uncharacteristically violent or offensive behavior towards parties or co-workers, for which the employee was fined 20% of the basic salary for August. The second case involved unpaid absence from work for two consecutive working days, for which he was fined 20% of the basic salary for May. In Trstenik, in 2021, a disciplinary proceeding was initiated due to a severe breach of official duty and inappropriate and violent behavior towards a co-worker, after which a fine was imposed. In 2020, the City Administration for Social Activities of the City of Kragujevac initiated three disciplinary proceedings: two for minor violations of duties from the employment relationship, which were suspended, and one for a more serious violation, which ended with the imposition of a fine. In 2022, a disciplinary procedure was initiated for a severe breach of duty from the employment relationship, and it is in process before the second instance of authority.

The most frequent violation of official duty refers to inappropriate and violent behavior toward parties and associates, which can be connected with insufficient knowledge of the rules of the Code of Conduct and ethical norms, which would contribute to reducing such behaviors to a minimum. In general, there are a small number of initiated disciplinary procedures and a mild penal policy. Also, disciplinary proceedings last quite a long time, and the epilogue is usually reached before the expiry of the period provided for the statute of limitations of the proceedings.

When it comes to respecting the ethical rules of conduct of local officials, the research questions first referred to the existence of a Code of Conduct for local officials and employees. All surveyed local self-governments from the research sample adopted Codes of Conduct for local officials and employees. At the official web presentations of local self-governments, it was noticed that none of the local self-governments from the research sample had a prominent Code of Conduct on the home page of their web presentation. These documents are difficult to find on the websites of local governments because they are mostly found on links related to other documents.

This shows the insufficient importance attached to the rules of the code of conduct and the general ethics of employees toward parties and associates, as well as the building of a culture of integrity in local self-governments. It is a clear indication that citizens do not have the opportunity to easily and simply familiarize themselves with the code's content to know what behavior they can expect from officials.

Furthermore, the results indicate that the codes are similar since they contain the same or similar principles of the work of officials. Thus,

the Code of Conduct of the City of Kruševac for Local Officials (Kodeks ponašanja službenika i nameštenika grada Kruševca, 2021) includes a significant provision that all persons who establish an employment relationship for the first time are required to confirm that they are familiar with the rules contained in the Code of Conduct by giving a written statement, which will be an integral part of the employee's personnel file². However, Such a provision should apply to all officials and agents, not only those who establish an employment relationship for the first time. This provision should also apply to officials. The municipality of Bačka Palanka has adopted the Rulebook on managing the conflict of interest of municipal administration employees, which regulates the procedure in cases of existence or suspicion of existence of a conflict of interest. (Правилник о управљању сукобом интереса у општинској управи општине Бачка Паланка, 2022)³. As for the code of conduct of local officials, some local governments, such as the city municipalities of Zvezdara, Smederevo, and Vlasotince, adopted this code in 2005. These Codes should be amended and supplemented following the new challenges faced by public administration in regulating conflicts of interest, conflicts of interest in public procurement, nepotism, and politicization, among other issues. Kraljevo, Požarevac, Svrlijig, Valjevo, and Bor still have not adopted codes of conduct for local officials. In contrast, when asked if it adopted a Code of Conduct for local officials, the Belgrade Municipality of Palilula answered that it adopted a Code of Conduct for local officials and employees, which is not the same act.

The only case of violation of the provisions of the Code of Conduct for local officials and employees, viewed concerning the research sample, can be observed, which occurred in Subotica in 2021, due to "expressing views contrary to the views of the local self-government", after which the official was reprimanded. Due to the lack of details about what kind of behavior was involved in the specific case, we cannot express an opinion on this violation of the Code of Conduct.

The unusual position of the city of Bor is that the Permanent Conference of Cities and Municipalities adopted the Code of Conduct for local officials, which applies accordingly to all local self-governments and does not need to be adopted by the local self-government. However, it concerns the fact that the Permanent Conference of Cities and Municipalities only recommended the Code model, as well as examples and

² Code of conduct for officials and employees of the city of Kruševac, available at: <https://krusevac.ls.gov.rs/wp-content/uploads/2022/01/Kodeks-ponasanja-sluzbenika-i-nameševnika.pdf>, access: 10.11.2023.

³ Rulebook on conflict of interest management in the municipal administration of Bačka Palanka municipality, available at: <https://backapalanka.rs/wp-content/uploads/2022/07/pravilnik.pdf>, access: 15.08.2023.

models of other documents, thereby making a great contribution to the reform of local self-governments in Serbia. This does not mean that the document model can be applied accordingly until it is previously adopted by the local self-government.

Taking into consideration the liability of officials for damage in local self-governments and autonomous provinces, there is no difference in the rules of the Law on Civil Servants - intent or gross negligence is a condition for liability for damage to officials. In the selected units of local self-government from the research sample—30, not a single case of officials' liability for damage caused to the employer or for damage predicted to a third party was found. This leads to the conclusion that after paying the compensation claim, local governments are not interested in using officials' recourse to prove intent or gross negligence. It is difficult to prove intent in practice, but we believe gross negligence can be proven in a large number of cases, which can have an extremely positive effect on the enhanced liability system.

The research results in the assessment segment (questions numbered 7 and 8) indicate the types of assessments the evaluated employees received or did not receive. According to the Assessment Regulation, the prerequisites for assessment are work goals, and the criteria for assessment are independence, initiative, conscientiousness, and precision, the results achieved in executing the workplace duties and established goals, cooperation with other employees, and other abilities required by the specific workplace (Uredba o ocenjivanju službenika, 2019).⁴ Also, the types of grades are "stands out", "good", "satisfactory", and "not satisfactory".

Based on these evaluations and criteria, the evaluation results in the local self-government units included in the research sample are as follows:

City Municipality of Novi Beograd, City of Beograd:

year 2020 - 12.9% - good, 84.51% - stands out, 2.59% - unrated;
 year 2021 - 15.13% - good, 79.60% - stands out, 5.27% - unrated;
 year 2022 - 8.67% - good, 88, 00% - stands out, 3.33% - unrated.

City Municipality of Palilula, City of Beograd:

year 2020 - 2% satisfactory; 46% good; 52%-stands out;
 year 2021- 2% satisfactory; 46% good; 52%-stands out;
 year 2022-2% satisfactory; 46% good; 52%-stands out;

City Municipality of Palilula, City of Beograd:

year 2020 - 54,05%- stands out; 45,95-good.
 year 2021 - 74,79%- stands out; 24,37%-good, 0,84- satisfactory (1 official)
 yuer 2022 - 83,58%- stands out; 16,42%-good.

⁴ Decree evaluating civil servants (Official Gazette of RS, No. 2/2019).

City of Vranje:

year 2020 -77%- stands out, 23%-good,
year 2021 -76%- stands out, 23%-good, 1%- satisfactory,
year 2022 -80%- stands out 20%-good.

Municipality of Svrlijig

year 2020-100%- stands out
year 2021-100%- stands out
year 2022-100%- stands out

City of Smederevo:

year 2020 -92,27%- stands out, 7,73%- good;
year 2021 -94,27%- stands out, 5,73%- good,
year 2022 -94,24%- stands out, 5,76%- good.

Municipality of Čajetina:

year 2020 -30%- stands out, 70%- good;
year 2021 -30%- stands out, 70%- good,
year 2022 -30%- stands out, 70%- good.

Municipality of Prijepolje:

year 2020 -100%- stands out
year 2021-100%- stands out
year 2022 -100%- stands out

City of Zaječar:

year 2020 -33,76%- stands out, 42,86%- good,
year 2021-37,82%- stands out, 46,15%- good,
year 2022 -52,67%- stands out, 36,67%- good.

City of Novi Pazar:

year 2020 -20,11%- stands out, 19,89%- good,
year 2021 -20,11%- stands out, 19,89%- good,
year 2022 -20,11%- stands out, 19,89%- good.

City of Kraljevo:

year 2020 -15%- stands out, 85%- good,
year 2021 -22%- stands out, 78%- good,
year 2022 -32%- stands out, 68%- good.

City of Pančevo:

year 2020 -73,50%- stands out, 26,07%- good, 0,43%- satisfactory,
year 2021 -80,97%- stands out, 18,14%- good, 0,88%- satisfactory,
year 2022 -86,30%- stands out, 13,69%- good.

City of Subotica:

year 2020 -32,63%- stands out, 65,25%- good, 2,12%- satisfactory.
year 2021 -36,19%- stands out, 62,26%- good, 1,55%- satisfactory,
year 2022 -24,54 %- stands out, 74,1%- good, 1,36%- satisfactory.

Municipality of Vrbas:

year 2020 -97%- stands out, 3%- good,
year 2021 -95%- stands out, 5%- good,
year 2022 -87%- stands out, 13%- good.

Municipality of Vlasotince:

year 2020 -37,78%- stands out, 62,22%- good,
year 2021 -100%- stands out,
year 2022 -100%- stands out.

City of Pirot:

year 2020 -46,23%- stands out, 53,77%- good,
year 2021 -58,56%- stands out, 41,44%- good,
year 2022 -63,86%- stands out, 36,14%- good.

City of Kruševac

year 2020 -90%- stands out, 10%- good,
year 2021 -90%- stands out, 10%- good,
year 2020 -92%- stands out, 8%- good.

Municipality of Čičevac:

year 2020 -75%- stands out, 25%- good,
year 2021 -58%- stands out, 42%- good,
year 2022 -97%- stands out, 3%- good.

Municipality of Bačka Palanka:

year 2020 -65%- stands out, 35%- good,
year 2021 -60%- stands out, 40%- good,
year 2022 -80%- stands out, 20%- good.

City of Požarevac:

year 2020 - 63.35% - stands out, 34.65% - good;
year 2021 - 36.60% - stands out, 61.44% - good, 1.96 - satisfactory;
year 2022 - 38.75% - stands out, 60.00% - good;

City of Loznica:

year 2020 -95%- stands out, 5%- good,
year 2021 -95%- stands out, 5%- good,
year 2022 -95%- stands out, 5%- good.

City of Vršac:

The question was not answered

Municipality of Trstenik

year 2020 -6,7%- stands out, 93,3%- good,
year 2021 -8%- stands out, 92%- good,
year 2022 -18.3%- stands out, 81,7%- good

City of Niš- City Administration for Social Activities

year 2020 -84%- stands out, 1%- good, 1%- satisfactory, 14%- unrated,
 year 2021 -97%- stands out, 1%- good, 2%- unrated,
 year 2022 -82%- stands out, 1%- good, 17%- unrated.

City of Užice:

year 2020 -41%- stands out, 59%- good
 year 2021 -46%- stands out, 54%- good.
 year 2022 -59%- stands out, 41%- good

City of Bor:

year 2020 -91.51%- stands out, 8.49%- good,
 year 2021 -90%- stands out, 10%- good,
 year 2022 -90%- stands out, 10%- good.

City of Valjevo:

year 2020 -72%- stands out, 28%- good, 1.3%- satisfactory,
 year 2021 -67%- stands out, 33%- good, 1.7%- satisfactory
 year 2022 -71%- stands out, 29%- good, 0.9%- satisfactory.

Municipality of Bujanovac:

year 2020- 10.7% - stands out, 81.70% - good, 7.6%-satisfactory;
 year 2021 - 9.57% - stands out, 82.97% - good, 7.43 - satisfactory;
 year 2022 - 11.45% - stands out, 80.20% - good, 8.52% - satisfactory.

City of Kragujevac- City Administration for Social Activities

year 2020 -2.70%- stands out, 92.60%- good, 4.70%- satisfactory,
 year 2021 -5.10%- stands out, 94.90%- good,
 year 2022 -4%- stands out, 96%- good

City of Šabac

year 2020 -79.13%- stands out, 20.87%- good,
 year 2021 -90.62%- stands out, 9.38%- good,
 year 2022 -95.38%- stands out, 4.62%- good

DISCUSSION AND CONCLUSION

Accountability is a comprehensive political, legal, and social concept. It implies the accountability of public administration bodies and organizations for the (non)achievement of strategic work goals and the responsibility of appointed, appointed, and employed persons for personal actions. Disciplinary accountability promotes the legal, efficient, and moral behavior of administration employees and calls for respect for rights and ethics. It is responsible for achieving the administration's primary goals—protecting public interest and citizens' rights and validly implementing public policies. The European Union and other international and regional organizations promote strengthening accountability at the

institutional and individual levels. Strengthening respect for work discipline is the basis for strengthening the integrity of public administration and the trust of citizens and other users of public services. Since the rules of the disciplinary procedure are regulated by regulations (at the central and local levels of administration), the emphasis is on the application of these rules in practice. The purpose of this institute is not only sanctioning but also encouraging legal and efficient work and respect for work discipline.

The research carried out in selected units of local self-government indicated that the most frequent violations of official duties are the most serious: inappropriate and violent behavior towards parties and colleagues, failure to fulfill work obligations, negligent, untimely execution of tasks and orders of a superior, as well as being late for work three or more times, and leaving work early, for which a fine was imposed - 20% of the basic salary for the month in which the injury was committed. Also, although codes of conduct for local officials and employees have been adopted in all examined local self-government units, local authorities do not attach sufficient importance to employee ethics and strengthening integrity in local self-government. These results indicate officials' lack of knowledge and awareness of legal rules and ethical norms. The practice of the Administrative Court of Serbia confirms that most cases are judged in cases involving more severe disciplinary violations due to the greater motivation of officials to use legal means, bearing in mind the prescribed sanctions (Vukašinović-Radojičić & Čogurić, 2022). Furthermore, by analyzing the Administrative Court's judgments, it can be concluded that in many cases, the lawsuit was accepted due to significant violations of the defendant's rules of conduct. Continuous professional training of officials who resolve disciplinary matters can overcome perceived insufficient knowledge of the rules of the disciplinary procedure. (Vukašinović-Radojičić, & Čogurić, 2022). Strengthening managers' awareness of the importance and consequences of disciplinary accountability and evaluation is necessary.

When evaluating officials in the surveyed local self-government units, the percentage of officials rated "excellent" exceeds 90%. It happens that some local self-government units (Prijepolje, Svrlijig, Vlasotince) have rated all employees who are evaluated (100%) with the highest rating ("stands out") for three consecutive years. Bearing in mind that according to the Regulation, the grade "stands out" is assigned to an employee who achieves the set work goals and fulfills the workplace requirements with an exceptional result above average, it is impossible for all employees to achieve the planned exceptional and above-average results. At the same time, this approach to the evaluation process becomes meaningless. Those who really achieve exceptional results are demotivated to continue working and are singled out, praised, and progressed be-

cause they are placed in the same rank as the others. Given that promotion depends on evaluation, this approach ensures that all employees rated "outstanding" at least twice in a row meet the requirements for promotion if there is a vacancy and the employee meets the conditions for working there. According to the research results, this would mean that during the three years, in 2/3 of the local self-government units, as many as 90% of the employees met the promotion condition, which indicates the ineffectiveness of the evaluation system. Suppose 90% of employees, and sometimes 100% of all employees, meet the requirements for advancement. In that case, the question is whether they can all advance, whether there are enough vacancies for advancement to an immediately higher executive position (most have the conditions to work there), who will progress concretely, and according to which criteria. Given that there are no objective legal criteria, a discretionary decision-making question regarding advancement is raised, which contradicts the basic evaluation principles of fairness, impartiality, and transparency. At the same time, the results indicate a disconnection between human resources management functions—evaluation and advancement, i.e., rewarding.

The ineffectiveness of the evaluation system is indicated by the results obtained in the city municipality of Palilula, the municipality of Čajetina, and the city of Novi Pazar, in which three years in a row, the evaluators evaluated the employees identically - in the same percentage amount of the total number of employees being evaluated. This indicates an insufficient understanding of the purpose of evaluation and knowledge of the procedure by the evaluator. Pursuant to the Regulation, the evaluator is obliged to monitor and supervise the work of the employee constantly, to evaluate it quarterly according to the set standards and criteria. Based on that, he is obliged to prepare a report, interview the official, and submit the evaluation proposal in the report to the controller. The controller checks the report and gives his conclusions and observations, and the human resources unit checks both the evaluator and the controller. This means that all employees who participate in the evaluation process must be familiar with the method of evaluation, the procedure, the criteria, and the criteria for employee evaluation. The objectivity of the procedure must be taken into account - it is based on legal criteria and the need to suppress subjective evaluation, bearing in mind that in smaller local communities, employees know each other, which is a significant limitation in the evaluation procedure. The results related to the received grades "does not satisfy" and "satisfy" suggest the non-application of the foreseen sanctions for failure to achieve the planned results, which may be a transfer to a lower title that corresponds to the level of education and the fulfilment of the conditions for work, the determination of a lower coefficient, as well as the termination of the employment relationship. Consistent application of the foreseen sanctions could significantly contribute

to strengthening officials' accountability and motivation. The non-application of prescribed evaluation rules in practice indicates the need for education and the strengthening of managers' awareness of the importance and purpose of evaluation as a function of human resource management. At the same time, the concept of "Managerial accountability" would be applied consistently. Strengthening the accountability of officials and the local self-government, in general, can be influenced by the use of recourse rights from officials, i.e., proving their intent or gross negligence, since, as the results show, the surveyed local self-government units, after paying the compensation claim, were not interested in using this right.

To strengthen public administration's integrity, legal solutions must be fully implemented, the concept of "Managerial accountability" developed, and an adequate institutional framework developed. Official accountability involves achieving the administration's primary goals, which are protecting public interest and values and effectively implementing public policies. On the other hand, it contributes to suppressing negative phenomena, such as corruption, conflict of interest, nepotism, politicization, and improper application of discretionary assessment, among other issues. Personal responsibility, as the essence of institutional accountability, promotes the legal, professional, efficient, and moral performance of work of public importance, with respect and a relationship of trust towards the users of public services.

ACKNOWLEDGMENT. The paper is the result of research within the project "Responsibility in the Legal and Social Context", funded by the Faculty of Law, University of Niš, in the period 2021–2025.

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КОНЦЕПТУАЛНА ПИТАЊА ОДГОВОРНОСТИ ЈАВНИХ СЛУЖБЕНИКА: ИСТРАЖИВАЊЕ СПРОВЕДЕНО У ЈЕДИНИЦАМА ЛОКАЛНЕ САМОУПРАВЕ У РЕПУБЛИЦИ СРБИЈИ

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Резиме

У раду су приказани резултати истраживања, спроведеног у 30 локалних самоуправа које третира поједине сегменте одговорности локалних службеника. Одговорност је свеобухватан концепт у политичком, правном и друштвеном смислу који са једне стране подразумева одговорност органа и организација јавне управе за (не)остваривање стратешких циљева рада, а са друге, одговорност именованих, постављених и запослених лица за личне поступке. Институт дисциплинске одговорности службеника поспешује законито, ефикасно и морално поступање запослених у управи и позива на поштовање и права и етике. У функ-

цији је ostvarivaња osnovnih ciljeva rada uprave – zaštite javnog interesa, prava građana i vaļanog sprovođeња javnih politika. Evropska unija i druge meļunarodne i regionalne organizacije promovišu jačaње odgovornosti na institucionalnom i individualnom nivou. Jačaње poštovaња radne discipline, osnova je jačaња integiteta javne uprave i povereња građana i drugih korisnika javnih usluga. Budući da su pravila disciplinskog postupka uređena propisima (na centralnom i lokalnom nivou uprave), akcenat je na primeni ovih pravila u praksi. Svрha ovog instituta nije samo sankcionisaње veћ i podstičaње na zakonit i efikasan rad i poštovaње radne discipline. Istraживање je pokazalo mnoge nedоследности u sprovođeњу disciplinske procedure.

Други део истраживања односи се на систем оцењивања локалних службеника, који је показао велику слабост и потпуно одсуство примене прописаних критеријума и објективности приликом оцењивања. С обзиром на то да оцењивање условљава напредовање, овај систем мора бити реформисан, а његова примена у пракси адекватно примењивана, како би пружио очекиване резултате.

Corrigendum

In the Journal Teme, Vol. XLVII, No 3, July-September, 2023, in the article:

Mirjana Franceško, Jasmina Nedeljković, Branislav Kosanović

A SHORTENED VERSION OF THE ACHIEVEMENT MOTIVE SCALE – MOP-20

TEME, Vol. XLVII, No 3, July-September, 2023, pp. 563-580

<https://doi.org/10.22190/TEME230418035F>

in pdf and printed version of article Acknowledgment was omitted.

The Editor-in-Chief has decided to publish a Corrigendum (Acknowledgement) for this article.

Corrigendum (Omitted Acknowledgment):

ACKNOWLEDGEMENT. This paper is part of the research project *Challenges of young people in COVID-19 and post COVID-19 period: Violence or the development of society in the spirit of entrepreneurship*, financed by the Provincial Secretariat for Higher Education and Scientific Research, number: 142-451-2587/2021.

<https://teme2.junis.ni.ac.rs/index.php/TEME/article/view/2006>

<https://doi.org/10.22190/TEME241128045E>

Link to the corrected article:

<https://teme2.junis.ni.ac.rs/index.php/TEME/article/view/1809>

<https://doi.org/10.22190/TEME230418035F>

INSTRUCTIONS FOR AUTHORS ON PAPER PREPARATION

Formatting. Papers should be sent as *Microsoft Office Word* files (version 2000, 2003, 2007), font *Times New Roman*, font size 12. Page setup margins should be 2.5 cm (top, bottom) and 2.5 cm (left, right), paper size A4 (210 mm x 297 mm). Paragraphs should be formatted with line spacing 1.5, and justified (Format, Paragraph, Indents and Spacing, Alignment, Justified). Do not break words at the end of the line.

Paper length. Research papers should not exceed 37.000 characters (spaces included), and reviews should not be longer than 8.000 characters (spaces included).

Language, alphabet. The languages of publication in the TEME is English (font *Times New Roman*). Contributions be rejected if the language is not at the appropriate level of correctness and style. If the authors wish to increase the visibility of their papers, they are supposed to submit Serbian version of the article as well (as Supplementary file - Word format, using the Cyrillic alphabet).

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The author should remove from the text of the paper all the details that could identify him/her as the author. Authors must enter all the necessary data during the electronic submission of the paper.

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- **Paper title in English**
- **Abstract in English** 100 to 250 words, followed by 5 key words.
- The title and the abstract of the paper should be directly linked to the paper content, with no information that would identify the author(s) of the paper.
- **Paper title in Serbian**
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- The paper should follow the **IMRAD** structure (Introduction, Methods, Results and Discussion), when it presents an empirical study
- **Paper body** should not contain more than three levels of subdivision into *sections* and *sub-sections*. Level one sections should be introduced by headings printed in *Italic* and in **CAPITAL LETTERS**, formatted as centred. Level two sections should be introduced by headings in *Italic*, with the initial capital letter, formatted as centred. Level-one and level-two headings should be separated from the previous text by one line. Level three sections should be introduced by a heading printed in *Italic*, but placed as a regular paragraph, separated by a full-stop from the text that follows.

Each paragraph should have the first line indented (1 cm).

In-text citations: Whenever referring to a source (monograph, article, statistical source), the author should cite the source in the text, using the

author-date system (Surname, year of publication, pages referred to, all in brackets) – Please, refer to the table at the end of these *Instructions*.

- When referring to several works by the same author, provide all the years of publication chronologically after the author's name. If there are several works by the same author published the same year, provide further specification using letters (a, b,...) after the year of publication: "...confirming this hypothesis (Wuthnow, 1987a, p. 32)...".

- When referring to several works by different authors, provide the authors' names in brackets following the alphabetical order, separating authors by semi-colon: "... several studies were central to this question (Jakšić, 1993; Iannaccone, 1994; Stark and Finke, 2000)."

Direct quotations can be included in the text if not longer than 20 words. Longer quotations should be given as separate paragraphs, spaced-out from the previous and following text, and with the following formatting: Format, Paragraph, Indents and Spacing, Left 1 cm, Right 1 cm, Line spacing – Single; for instance:

To explain how “culture through language affects the way we think and communicate with others of different background” (Gumperz, 2001, p. 35), Gumperz states:

“Conversational inference is partly a matter of a priori extra-textual knowledge, stereotypes and attitudes, but it is also to a large extent constructed through talk” (Gumperz, 2001, p.37).”

It is crucial that the in-text citations and references should match the literature listed at the end of the paper. All in-text citations and references must be listed in the References, and the References must not contain sources not referred to or cited in the text. The bibliography listed at the end of the paper should contain author names and source titles in original languages and alphabets, without translation.

Tables, graphs, and figures. Tables, graphs and figures should be numbered (sequentially), with captions explaining their content. Captions should precede tables, but follow graphs and figures. Graphs and figures must be clearly visible in the text, so they should be provided in 300dpi resolution. Graphs and figures must be single objects (no Drawing elements added). Where necessary, mathematical formulas should be added to the text using Microsoft Equation Editor.

Appendices. should be marked by *letters* (sequentially), e.g. Appendix A, Appendix B etc., and should contain a title describing the content of the appendix. When there is only one appendix, no letters are necessary in its title (only "Appendix").

➤ **Literature (References).** A complete list of references should be provided as a separate section at the end of the paper. The references should be listed in accordance with the **APA Style**. The references should be listed alphabetically, by the authors' last (family) names. For publication titles in Serbian, the English translation should also be

provided in brackets. The works by the same author should be listed chronologically (from the most to the least recent ones). Wherever possible, provide the DOI number, too, in addition to other reference data.

➤ **Summary in Serbian.** Please provide a summary at the end of the paper, after the References section. The summary should not be longer than 1/10 of the paper (i.e. 2,000 to 3,700 characters). The summary should be formatted as *Italic*, with single line spacing.

EXAMPLES OF SOURCE QUOTING AND REFERENCING:

Journal papers and articles – 1 author

In-text citation:

(Manouselis, 2008), i.e. (Manouselis, 2008, p. 55)

In ‘References’:

Manouselis, N. (2008). Deploying and evaluating multiattribute product recommendation in e-markets. *International Journal of Management & Decision Making*, 9, 43-61. doi:10.1504/IJMDM.2008.016041

Journal papers and articles – 2 to 6 authors

In-text citation:

First reference: (Uxó, Paúl, & Febrero, 2011)

Subsequent references: (Uxó et al., 2011)

In ‘References’:

Uxó, J., Paúl, J., & Febrero, E. (2011). Current account imbalances in the monetary union and the great recession: Causes and policies. *Panoeconomicus*, 58(5), 571-592.

Journal papers and articles – more than 6 authors

In-text citation:

(Cummings et al., 2010, p. 833)

In ‘References’:

Cummings, E., Schermerhorn, A., Merrilees, C., Goetze-Morey, M., Shirlow, P., & Cairns, E. (2010). Political violence and child adjustment in Northern Ireland: Testing pathways in a social-ecological model including single-and two-parent families. *Developmental Psychology*, 46, 827-841. doi: 10.1037/a0019668

Book – 1 author

In-text citation:

(Heschl, 2001, p. 33)

In ‘References’:

Heschl, A. (2001). *The intelligent genome: On the origin of the human mind by mutation and selection*. New York, NY: Springer-Verlag.

Book – edited volume

In-text citation:

(Lenzenweger & Hooley, 2002)

In ‘References’:

Lenzenweger, M. F., & Hooley, J. M. (Eds.). (2002). *Principles of experimental psychopathology: Essays in honor of Brendan A. Maher*. Washington, DC: American Psychological Association.

Paper or chapter in an edited volume**In-text citation:**

(Cvitković, 2007)

In ‘References’:

Cvitkovic, I. (2007). Katolicizam [Catholicism]. U A. Mimica i M. Bogdanović (Prir.), *Sociološki rečnik [Dictionary of Sociology]* (str. 226-227). Beograd: Zavod za udžbenike.

Encyclopaedia entry**In-text citation:**

(Lindgren, 2001)

In ‘References’:

Lindgren, H. C. (2001). Stereotyping. In *The Corsini encyclopedia of psychology and behavioral science* (Vol. 4, pp. 1617-1618). New York, NY: Wiley.

Papers in Conference Proceedings**In-text citation:**

(Bubanj, 2010)

In ‘References’:

Bubanj, S., Milenković, S., Stanković, R., Bubanj, R., Atanasković, A., Živanović, P. et al. (2010). Correlation of explosive strength and frontal postural status. In: Stanković, R. (Ed.): *XIV International Scientific Congress FIS Communications 2010 in Sport, Physical Education and Recreation* (191-196). Niš: University of Niš, Faculty of Sport and Physical Education.

PhD Dissertations, MA Theses**In-text citation:**

(Gibson, 2007)

In ‘References’:

Gibson, L. S. (2007). *Considering critical thinking and History 12: One teacher’s story* (Master’s thesis). Retrieved from <https://circle.ubc.ca/>

Institutions as authors**In-text citation:**

(Републички завод за статистику, 2011)

In ‘References’:

Републички завод за статистику. *Месечни статистички билтен*. Бр. 11 (2011).

Laws**In-text citation:**

(Закон о основама система васпитања и образовања, 2004, чл. 5, ст. 2, тач. 3.)

In ‘References’:

Закон о основама система васпитања и образовања, Службени гласник РС. Бр. 62 (2004)

Legal and other documents

In-text citation:

(Legal Consequences for States of the Continued Presence of South Africa in Namibia (South West Africa) notwithstanding Security Council Resolution 276, 1971)

In ‘References’:

Legal Consequences for States of the Continued Presence of South Africa in Namibia (South West Africa) notwithstanding Security Council Resolution 276, (1970), ICJ Reports (1971) 12, at 14

Please refer to:

Publication Manual of the American Psychological Association, 6th Edition, 2009;

<http://www.library.cornell.edu/resrch/citmanage/apa>

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