UNIVERSITY OF BELGRADE
FACULTY OF ECONOMICS AND BUSINESS

UNIVERSITY OF BELGRADE
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MASTER THESIS

IMPACT OF DIGITALIZATION ON ADMINISTRATION AND COLLECTION OF TAXES IN SERBIA

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1 INTRODUCTION

The contemporary trends which arise from technological advancements are undoubtedly shaping economies worldwide. Although this indeed results in various enhancements in economic activities, there are numerous challenges that need to be addressed simultaneously. One of the main concerns of economic subjects – on the micro level – and governments – on the macro level - is related to the impact of digital transformation on taxation. Digitalization may have a direct impact on the tax administration costs – both from the point of view of the government (tax enforcement costs) and from the point of view of taxpayer (tax compliance costs). In addition to that, the digitalization of transactions enables the government to monitor them more accurately, thus reducing the scope of the shadow economy and tax evasion.

Serbia has undertaken significant steps in digital transformation in terms of the administration of taxes by introducing electronic filing of tax returns and payment of taxes, electronic fiscal cash registers, and e-invoices. Given the relevance of the outlined changes in the contemporary tax environment in Serbia, this thesis deals with the analysis of the effects that digitalization had on tax administration and tax collection in Serbia. The main goal of the thesis is to provide a deeper understanding of how digitalization has impacted tax enforcement and tax compliance in Serbia. Therefore, the thesis will analyse the impact of digital transformation on tax enforcement and tax compliance costs, which can also be connected to the effects on the tax revenue collection (with the focus on VAT). However, due to the digital divide among taxpayers, this transformation should be analysed through the lenses of the effects it has on vulnerable groups. Moreover, it is important to understand the challenges in implementation of digital tools within tax systems, and therefore identify the potential policy recommendations with regards to strengthening the digitalization of tax system. By addressing these questions, this thesis has the potential to contribute to the overall understanding of the role of digital tools in tax systems, and impact digitalization has on tax enforcement and compliance. In accordance with the outlined issues that the thesis aims to address, as well as the previous research that has been done regarding the effects of digital transformation, several hypotheses are proposed in this research. The first hypothesis is: *Digital transformation in administering taxes (e-filing and e-payments of taxes) is associated with a significant decrease in the tax administration costs for the government*. Since the improvement in efficiency – and effectiveness – in terms of tax administration were some of the main reasons for the digitalisation

of this system, it is important to test whether this transformation has led to significant decrease in the tax administration costs for the government. As a consequence of the reduction in these costs, it is realistic to expect that there could be improvements in taxpayers' voluntary compliance, hence why the second hypothesis in the research is: *Use of digital platforms for filing taxes and accessing tax-related information may be linked with a decline in tax compliance costs, thus fostering taxpayers' voluntary compliance*. As a result, there could be a reduction of illegal activities in terms of shadow economy and tax evasion and this is the third hypothesis in the research: *The introduction of digital monitoring and real-time reporting mechanisms may be linked to a decrease in shadow economy and tax evasion, but yet in the long run, if digital transformation is followed by other institutional reforms*. Ultimately, due to the different levels of digital literacy among taxpayers, the digital transformation could lead to unbalanced effects and even discrimination, suggesting that the fourth hypothesis should be: *The use of digital tools in the tax system may lead to a digital divide among taxpayers*.

Additionally, there are several research questions that the master thesis focuses on. Above all, the research analyses to what extent has a digital transformation in administering taxes had an impact on tax administration costs for the government (tax enforcement costs) and for the taxpayers (tax compliance costs). To investigate this question, the available data from official sources such as The World Bank is used. Moreover, the digitalization of tax administration and compliance procedures may narrow the scope for tax underreporting and encourage tax compliance. To research this question, the thesis provides a comprehensive review of the existing empirical literature and calculates one of the measures of tax (VAT) collection efficiency – the C-efficiency coefficient. Ultimately, it is important to understand how and to what extent can digital transformation have an impact on vulnerable groups. This question is examined by means of a set of inductive and deductive methods.

For the purposes of analyzing the impact of digitalization on tax enforcement and tax compliance in Serbia, in this thesis, the desk research method is used, compiled with the comparative method and use of statistical methods, to evaluate the available data. Collected literature, data, and information is critically analyzed using inductive and deductive methods to formulate relevant conclusions. Continuing with the analysis of the impact of digital transformation on the Serbian tax system, the historical data about tax revenue is collected and the C-efficiency coefficient is

calculated to monitor the trends in VAT collection efficiency before and after the digital transformation in Serbia. For that purpose, the official macroeconomic data of the Statistical Office and the Ministry of Finance of Serbia is used.

In terms of the structure, the thesis is divided into five sections. While the first one is dedicated to the theoretical framework and literature review, the remaining parts are focused on the concrete case of Serbia. The theoretical part aims to provide a general introduction and ensure understanding of the researched issues, and the one related to Serbia examines these questions in real life setting.

The thesis analyses the various aspects of digitalization of the tax administration in Serbia, focusing on its impact on both government and citizens, paying attention to the marginalized groups. Therefore, this study highlights the greatest benefits, as well as the most pressing challenges related to the digitalization of the tax administration in Serbia. Identifying the issues in the current tax system, including the lack of connectivity between the two levels of Serbian tax system – local (Local Tax Administration platform) and national (ePorezi platform) – and the Business Registers Agency platform, that all collect data about the taxpayers, presents the first step towards improving the tax system of Serbia. Therefore, this thesis can significantly contribute not only to the extension of the corpus of knowledge related to the tax system in Serbia, but also have practical implications for the policymakers. Furthermore, it can be a starting point for similar research in other countries that have been going through the same process and facing similar challenges.

2 THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Before diving deep into the case of digitalisation of the tax system of Serbia, it is necessary to take a step backwards, provide an adequate theoretical framework, and conduct a literature review. Such an approach will allow for a better understanding of the underlying issues connected to the process of digitalisation along with the benefits that it has brought. The following section of the thesis is dedicated to discovering the various views on digitalisation in tax administration, as suggested by authors who worked on this question. The compliance theory will be a starting point for understanding how taxpayers' behaviours are influenced during this transition. Ultimately, the challenges and barriers to implementing digitalisation will be examined from a theoretical standpoint.

2.1 Digitalisation in Tax Administration

Although the processes of digitalisation have been ongoing over the past couple of decades, studies about its impact in terms of tax enforcement and tax compliance have occupied the interest of researchers from the fields only in recent years. There have been several studies that confirmed the positive effects of implementing digitalisation in the sphere of public services, primarily the concept of e-government and proved that utilisation of information and communications technology (ICT) in governance has various positive implications.

The digital transformation of tax administration signifies a shift in operational procedures influenced by widespread adoption of modern technologies, internet connectivity, and the advancement of eGovernment initiatives.[1] The integration of new digital tools, methodologies, and solutions represents an enhancement in services provided to taxpayers while upholding standards of economic efficiency and alleviating burdens on tax compliance.[2]

[1] Ihnatišinová, D. (2021). Digitalization of tax administration communication under the effect of global megatrends of the digital age. In *SHS Web of Conferences* (Vol. 92, p. 02022). EDP Sciences.
[2] Li, J., Bao, N. J., Hu, S., Hu, W., & Zerbino, M. (2020). Digitalization and International Tax Dispute Resolution: A Window of Opportunity for BRITACOM. *Osgoode Legal Studies Research Paper*.

Broadly speaking, existing literature on the utilisation of ICT in taxation primarily concentrates on the digitisation of tax processes. It argues that simplifying tax procedures, implementing electronic tax filing systems, and enabling electronic tax payments lead to enhanced compliance levels in taxation.[3] Brondolo et al. (2014) put forth the argument that tax system reforms can have a favourable impact on tax revenues.[4] Pitic et al. (2019) state that tax authorities in developed nations are in the advanced stages of digitization, aiming to completely overhaul the tax system. The authors explain that this involves reaching a stage where tax administrations can assess taxes using data already provided by individuals and businesses, eliminating the need for redundant data collection. In response to technological advancements in society and commerce, digitalization has enabled tax authorities to leverage tools such as advanced analytics, pre-population, big data analysis, and blockchain technology. Consequently, this has led to substantial improvements in efficiency, enhanced service levels for taxpayers, and the introduction of new services by tax administrations.[5]

Bassey et al. (2022) highlight that tax authorities depend on their surrounding ecosystem for effectiveness, explaining that this ecosystem comprises interconnected elements such as actors, technologies, and institutions (Figure 1).[6] Although some of these elements change over time, Steinmo claims that one fundamental aspect endures: successful tax authorities can recognize, comprehend, and utilize their ecosystem to generate revenue.[7] Some authors have reminded long time ago that neglecting to comprehend and utilize this ecosystem may result in significant revolts and upheavals, and suggest that the historical events like the Magna Carta, the American Revolution, and the French Revolution, were a consequence of such lack of understanding and had profound societal implications.[8]

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[3] Uyar, Ali, Khalil Nimer, Cemil Kuzey, Muhammad Shahbaz, and Friedrich Schneider. "Can e-government initiatives alleviate tax evasion? The moderation effect of ICT." *Technological Forecasting and Social Change* 166 (2021): 120597.

[4] Brondolo, John, Carlos Silvani, and Eric Le Borgne. "Tax administration reform and fi scal adjustment: the case of Indonesia (2001–7)." In *Macroeconomic Policies in Indonesia*, pp. 156-221. Routledge, 2014.

[5] Pitić, G., Radosavljević, G., Babin, M., & Erić, M. (2019). Digitalization of the tax administration in Serbia. *Ekonomika preduzeća*, *67*(1-2), 131-145.

[6] Bassey, E., Mulligan, E., & Ojo, A. (2022). A conceptual framework for digital tax administration-A systematic review. *Government Information Quarterly*, *39*(4), 101754.

[7] Steinmo, S. H. (2018). *The leap of faith: the fiscal foundations of successful government in Europe and America* (p. 336). Oxford University Press.

[8] Burg, D. F. (2004). *A world history of tax rebellions: An encyclopedia of tax rebels, revolts, and riots from antiquity to the present*. Routledge.

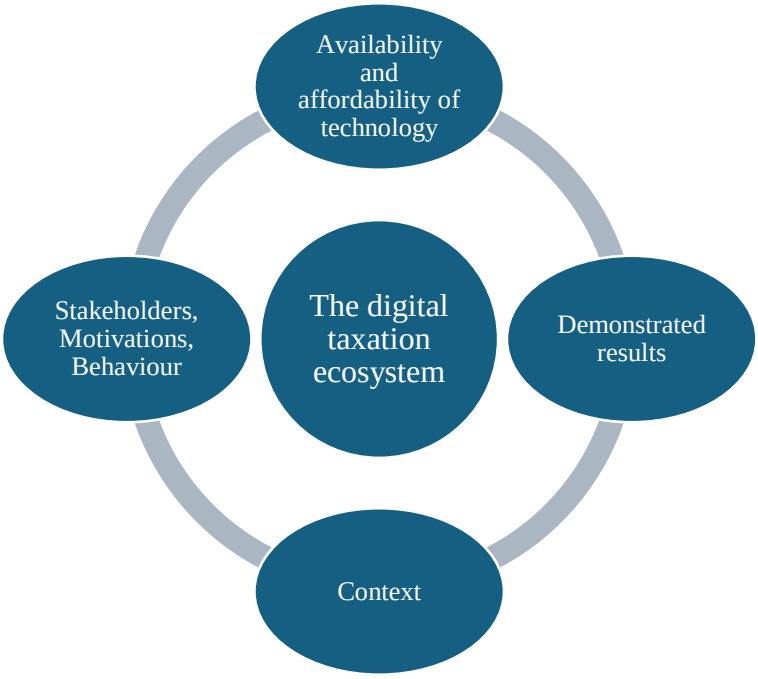

Figure 1: The digital taxation ecosystem

Source: Canares, M. P. (2016). Creating the Enabling Environment for more Transparent and Better-resourced Local Governments: A Case of E-taxation in the Philippines. *Information Technology for Development*, *22*(sup1), 121-138.

At the same time, Sidani et al. (2014) claimed that countries with efficient governance and tax systems characterised by effective tax collection and appropriate utilisation of tax revenues experience a decline in tax evasion.[9] Furthermore, a well-functioning tax system can establish a concise regulatory framework and institutional foundations that minimise instances of tax evasion.[10] Empirical evidence from Decman et al. (2010) focused on the impact of ICT implementation on government procedures, explicitly examining the simplification of complex tax processes in Slovenia.[11] Their findings indicated that while ICTs may not generate cost efficiency, they do offer non-financial advantages such as reducing paper-based tax returns, diminishing formal control activities, and providing instant access to tax data. Additionally, Night and

[9] Sidani, Yusuf M., Abdul Jalil Ghanem, and Mohammed YA Rawwas. "When idealists evade taxes: the influence of personal moral philosophy on attitudes to tax evasion–a L ebanese study." *Business Ethics: A European Review* 23, no. 2 (2014): 183-196.
[10] Tjen, Christine, and Chris Evans. "Causes and consequences of corruption in tax administration: An Indonesian case study." *eJTR* 15 (2017): 243.
[11] Dečman, Mitja, Janez Stare, and K. L. U. N. Maja. "E-government and cost-effectiveness: E-taxation in Slovenia." *Transylvanian Review of Administrative Sciences* 6, no. 31 (2010): 48-57.

Bananuka (2020) explored the role of adopting an e-tax system in mediating the relationship between attitudes toward the system and tax compliance in small and medium-sized enterprises in Africa. The study found that the adoption of an e-tax system, as well as positive attitudes toward it, significantly predicted higher levels of tax compliance.[12]

There is a consensus in the literature that the digitalization of tax administration is necessary.[13] The reason behind this imperative is evident given the inevitability of taxes and its potential to facilitate widespread engagement between a government and its citizens, irrespective of demographic factors, as well as due to the technological advancements that are shaping the everyday lives of citizens across the world and consequently impact the expectations they have from the governments.[14]

The impact of globalization is evident in the emergence of new information technologies that reshape the functioning of tax authorities. Notably, artificial intelligence (AI) is increasingly integrated into governmental operations and service delivery. Countries with robust economies, effective governance, and innovative private sectors lead in AI readiness, as indicated by the 2023 Artificial Intelligence Readiness Index. This includes nations like the US and Canada, Western European countries, with no representation from Latin American or African nations in the top rankings.[15] Adewoye and Olaoye (2014) further emphasise that the future planning of electronic systems encompasses key elements such as people, data processing, data communication, information system and retrieval, and system planning.[16]

[12] Night, Sadress, and Juma Bananuka. "The mediating role of adoption of an electronic tax system in the relationship between attitude towards electronic tax system and tax compliance." *Journal of Economics, Finance and Administrative Science* 25, no. 49 (2020): 73-88.
[13] Wang, Y. S. (2003). The adoption of electronic tax filing systems: an empirical study. *Government Information Quarterly*, *20*(4), 333-352.
[14] Bassey, E., Mulligan, E., & Ojo, A. (2022). A conceptual framework for digital tax administration-A systematic review. *Government Information Quarterly*, *39*(4), 101754.
[15] Oxford Insights. (2023). Government AI Readiness Index 2023. Available at: https://oxfordinsights.com/ai-readiness/ai-readiness-index/ accessed on 29.03.2024.
[16] Adewoye, J. O., & Olaoye, C. O. (2014). Usage of information technology to enhance professional Productivity among accountants in Ekiti State. *International Journal of Accounting and Financial Management Research (IJAFMR)*, *4*(2), 7-18.

Different researchers, including Agarwal and Dibyendu (2020)[17] and Segismundo (2020),[18] have provided evidence of how innovation, particularly in ICT, influences governance effectiveness. An illustration of this is the utilisation of ICT innovation to establish a governance informational infrastructure; researchers suggest that it has the potential to enhance service quality and provide robust support for optimal decision-making.[19] Additionally, it facilitates improved interaction between the government and citizens, leading to enhanced public accountability and proactivity. Consequently, the progress in ICT leads to an elevation in governance quality and the ability to combat corruption. Furthermore, it boosts the effectiveness of the judicial system and reinforces the importance of the rule of law. Moreover, the advantages of ICT in governance are further strengthened by the presence of a strong rule of law, which enhances its benefits.[20]

Despite the extensive literature on the beneficial sides of digitalisation in terms of tax enforcement and tax compliance, some authors draw attention to the issues that should concern the governments. Among the difficulties that tax authorities and taxpayers must face are privacy concerns, data security, and the need to adapt to fast-changing technologies. In the digital age, finding a balance between preserving individual rights and information and ensuring effective tax administration will continue to be complicated.[21]

It is important to highlight that some studies imply that the digitalisation of the tax administration may not be successful, and that it is not to be expected that this process could be carried out in a way that is beneficial for the agents of this system. Mallick (2021) stated that there is insufficient evidence to definitively indicate that the advancement of ICT will result in the predetermined objectives of efficiency, effectiveness, and satisfaction among taxpayers.[22] Some authors remind that this is especially true for the developing countries.[23]

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[17] Agarwal, A., & Maiti, D. (2020). ICTs and effectiveness of governance: A cross-country study. *Digitalisation and Development: Issues for India and Beyond*, 321-343.
[18] Segismundo, Á. (2020, October). Digitalization: how will it work in practice?. In *ERA Forum* (Vol. 21, No. 2, pp. 221-234). Berlin/Heidelberg: Springer Berlin Heidelberg.
[19] Strango, C. "Does digitalisation in public services reduce tax evasion?." (2021). Munich Personal RePEc Archive.
[20] *Ibid.*
[21] Kemmeren, Eric, Peter ESSERS, Daniel Smit, Michael Lang, Jeffrey Owens, Pasquale Pistone, Alexander Rust, Josef Schuch, Claus Staringer, and Alfred Storck, eds. *Tax Treaty Case Law around the Globe 2018: Schriftenreihe IStR Band 112*. Vol. 112. Linde Verlag GmbH, 2019.
[22] Mallick, H. (2021). Do governance quality and ICT infrastructure influence the tax revenue mobilisation? An empirical analysis for India. *Economic Change and Restructuring*, *54*(2), 371-415.
[23] Mashabela, M. F., & Kekwaletswe, R. M. (2020). A Model for Adopting and Using E-Filing. *e-Government*, *5*(8).

2.2 Tax Enforcement and Compliance Theory

Since the tax administration is undoubtedly going through a reform, it is important to check the perspective of taxpayers and the relationship between them and the tax authorities. For these purposes, compliance theory seems to be the appropriate approach. Compliance involves adhering to various expectations, including rules, standards, orders, and suggestions, while conformity specifically pertains to compliance with specific standards, rules, laws, or social norms.[24] Therefore, this theory provides a framework for understanding the dynamics of taxpayer behavior throughout the digitalization of the tax administration.

The literature on tax compliance reveals several gaps in understanding the behavior of taxpayers. While numerous studies have attempted to address these gaps by examining various factors, many have overlooked the perspectives of taxpayers directly affected by deterrent measures. Specifically, there has been limited analysis of the views of tax evaders and non-compliant taxpayers. Devos examined the interactions between the moral values of evaders and non-evaders and other compliance variables to determine whether morals play a mediating role. He further highlighted the importance of considering a diverse range of factors, including moral values, perceptions of tax fairness, and the impact of deterrence measures such as penalties and enforcement. Moreover, the author emphasized the need for mixed-method approaches in tax compliance research to enhance the validity of findings.[25]

Although empirical research has expanded, the conceptualization of compliance and noncompliance behaviour has become increasingly intricate, resulting in many frameworks and models. Consequently, compliance scholars often grapple with partial theories constructed on conflicting assumptions. Firstly, compliance theorists are challenged to develop internally coherent theories capable of accommodating the simultaneous pursuit of diverse motivations, including material, emotional, and normative objectives. Secondly, there is a struggle among compliance theorists to articulate the dynamics between these various motivations, such as the

[24] Etienne, J. (2010). Compliance Theories: A Literature Review. *Revue française de science politique*. 60. 493-517.
[25] Devos, K. (2014). Tax compliance theory and the literature. *Factors influencing individual taxpayer compliance behaviour*, 13-65.

interaction between normative and material goals[26] or between material and emotional goals[27] and how these interactions influence compliance and noncompliance behaviours.[28]

Understanding (non)compliance is complex, with many factors contributing to the taxpayers' behaviour.[29] Some behaviours may be "automatic," stemming from ingrained habits and routines, while others are "planned," representing deliberate efforts to achieve various objectives such as maximizing utility, fulfilling moral obligations, or avoiding sanctions. Additionally, compliance or noncompliance can sometimes result from regulators' incapacity, incompetence, ignorance, or misunderstanding of regulatory requirements.[30] In attempting to unravel this complexity, compliance theorists often concentrate on understanding compliance as a "planned" rather than "automatic" behaviour, viewing goal-oriented and purposeful actions as a reasonable approximation of actual behavioural processes. While this approach has yielded many insightful analyses, Etienne (2011) warned that several unresolved issues persist within this framework, hindering the advancement of compliance theory.[31]

As tax administrations in developed countries approach the last stages of digitalization, the overarching goal for all these activities is to achieve a paradigm shift in tax assessment and compliance. At this stage, the reliance on standardized data formats allows for an efficient use of taxpayer data by authorities, streamlining the tax assessment process. Incorporating third-party data becomes critical for enhancing tax administration efficiency and expanding tax coverage, as tax administrations can ensure in this way improved services to existing taxpayers while extending their reach to previously underserved sectors. [32]

In order to ensure a comprehensive digitalisation, tax authorities start by mainly using the data they already have, meaning that they simply transition from paper-based to digital tax filing. After

[26] Frey, B. S. 1997.Not Just for the Money: An Economic Theory of PersonalMotivation. Cheltenham: Edward Elgar.
[27] Makkai, T., & Braithwaite, J. (1994). Reintegrative shaming and compliance with regulatory standards. *Criminology*, *32*(3), 361-385.
[28] Etienne, J. (2011). Compliance theory: A goal framing approach. *Law & Policy*, *33*(3), 305-333.
[29] Suchman, Mark C. 1997. "On beyond Interest: Rational, Normative and CognitivePerspectives in the Social Scientific Study of Law,"Wisconsin Law Review1997:475–501
[30] Brehm, John, and James T. Hamilton. 1996. "Noncompliance in EnvironmentalReporting: Are Violators Ignorant, or Evasive, of the Law?"American Journal ofPolitical Science40: 444–77
[31] Etienne, J. (2011). Compliance theory: A goal framing approach. *Law & Policy*, *33*(3), 305-333.
[32] Pitić, G., Radosavljević, G., Babin, M., & Erić, M. (2019). Digitalization of the tax administration in Serbia. *Ekonomika preduzeća*, *67*(1-2), 131-145.

exhausting the internal sources, they integrate data from other governmental agencies and external sources, which fosters collaboration and support across government departments. Still, there is a great need for investments in digital infrastructure, as well as some legal framework adjustments, so that the process can continue in a smooth manner. While this is by no means an exhausting and time-consuming procedure, the main aim is to simplify the overall experience for both the taxpayers and the tax administration in the future. The simplification of tax procedures and the introduction of electronic filing options mark further advancements in the digitalization process, and the aim is to foster compliance.[33]

The most common strategies to enhance compliance involve increasing fines for violations, or offering monetary rewards for cooperation. However, empirical studies suggest that relying solely on punishment or its threat as a deterrent for (non)compliant behavior is not significantly effective, and that there is more to it in the compliance theory. Some studies from decades ago suggest that there is a chance that escalating fines for non-compliance may not impact compliance positively or negatively.[34] Moreover, under specific circumstances, reducing fines might even lead to increased compliance, as found by Langbein and Kerwin (1985).[35] Smith and Stalans (1991) found that positive incentives can result in higher rates of tax compliance.[36] Although this is not a common practice, it does provide an illustration on how the government can impact taxpayers' behaviour. With respect to this question, it is significant to underline that some studies found significant differences in terms of tax compliance between various groups of taxpayers, meaning that there is no uniform solution to stimulating voluntary tax compliance.[37]

More precisely, building upon the influential Allingham-Sandmo model, the decision to engage in tax evasion involves weighing the marginal costs against the marginal benefits of evasion. This implies that the level of taxes, aspects of the tax system, penalty policies, and the effectiveness of

[33] *Ibid.*
[34] Tsebelis, G. (1991). The effect of fines on regulated industries: game theory vs. decision theory. *Journal of Theoretical Politics*, *3*(1), 81-101.
[35] Langbein, L., & Kerwin, C. M. (1985). Implementation, negotiation and compliance in environmental and safety regulation. *The Journal of Politics*, *47*(3), 854-880.
[36] Smith, K. W., & Stalans, L. J. (1991). Encouraging tax compliance with positive incentives: A conceptual framework and research directions. *Law & Policy*, *13*(1), 35-53.
[37] Brockmann, H., Genschel, P., & Seelkopf, L. (2016). Happy taxation: increasing tax compliance through positive rewards?. *Journal of Public Policy*, *36*(3), 381-406; Bornman, M., & Stack, L. (2015). Rewarding tax compliance: taxpayers' attitudes and beliefs. *Journal of Economic and Financial Sciences*, *8*(3), 791-807.

tax enforcement (probability of detecting evaders) are the primary factors influencing tax evasion and compliance.[38]

According to Harrington (1988), agents tend to comply extensively when the associated costs are minimal, and non-monetary factors, like reputational damage from negative publicity in the case of companies, can also serve as incentives for compliance. Effective enforcement by regulators, including the ability to identify violations and communicate enforcement actions clearly, is crucial for achieving this outcome.[39] Evans et al. (2018) emphasise the influence of regulatory environment uncertainty on compliance behaviour. They note that in uncertain regulatory conditions, potential violators adjust their expectations about penalties based on the observed experiences of others. While vigorous enforcement can lead to positive spill-over effects, weak enforcement tends to have negative ones. Minimising uncertainty is crucial to promote positive spill-over effects, ensuring that regulated entities understand potential consequences. The authors suggest that if monetary penalties are removed in the public sector, alternative measures like public reprimands should be employed to signal regulatory certainty to other regulated entities.[40]

However, Alm (1996) offered another perspective. At that moment, the opportunities to evade taxes were significantly more available because it was difficult to detect evasion, and the penalties were low. Therefore, he suggested that the real question is not "Why is there so much cheating?" but "Why is there so little cheating?". In other words, he aimed to understand what motivates people to pay taxes when they could avoid them even at a low cost. The author explained that people respond differently to changes in their tax obligations, alternating between cooperation and free-riding, often influenced by social norms. These diverse findings suggest that a government compliance strategy focused solely on detection and punishment may be a reasonable starting point but insufficient on its own. Instead, a comprehensive approach is needed, emphasizing

[38] Allingham, M. G., & Sandmo, A. (1972). Income tax evasion: A theoretical analysis. Journal of Public Economics, 1(3-4), 323-338, as cited in Ranđelović, S. (2017). How to boost tax compliance and tax morale in Serbia?. *Ekonomika preduzeća*, *65*(1-2), 113-127.
[39] Harrington, W. (1988). Enforcement leverage when penalties are restricted. *Journal of Public Economics*, *37*(1), 29-53.
[40] Evans, M. F., Gilpatric, S. M., & Shimshack, J. P. (2018). Enforcement spillovers: Lessons from strategic interactions in regulation and product markets. *The Journal of Law and Economics*, *61*(4), 739-769.

enforcement alongside positive incentives for tax compliance, prudent use of taxpayer funds, and individual involvement in decision-making processes.[41]

Economists have discovered that carefully written letters can encourage individuals to comply with the tax code, especially considering people's cognitive limitations when processing complex information. Behavioural economists suggest using clear and straightforward language, "plain English," to reduce cognitive load and increase compliance. Additionally, framing the letter's message can influence its impact, leveraging human biases such as saliency bias. Emphasizing critical information with bold text or bright colours and providing access to additional assistance through a webpage can enhance the effectiveness of tax compliance letters. Social norms also play a significant role in influencing behaviour, as demonstrated by a UK study where framing individuals' behaviour about others led to increased compliance. The examples included messages such as: [42]

- "Nine out of 10 people pay their tax on time." (referred to as the basic norm)
- "Nine out of 10 people in the UK pay their tax on time." (country norm)
- "Nine out of 10 people in the UK pay their tax on time. You are currently in the very small minority of people who have not paid us yet." (minority norm)

Messages highlighting the connection between tax compliance and funding important public programs also proved effective in increasing compliance, suggesting tax administrators should consider emphasizing this connection in their communications.

As Kirchler et al. (2010) demonstrated, the rational choice approach only offers a partial explanation for compliance decisions. They proposed that compliance is influenced by two distinct factors, depending on the societal atmosphere. In an environment characterized by mistrust, strong authority is necessary to ensure tax compliance, and implementing higher fines and audit rates may prove to be effective tax policies. Conversely, in a society where taxpayers have trust in their government authorities, other factors become more significant. Elements such as knowledge, attitudes, moral appeals, fairness, and democratic principles may encourage voluntary compliance.

[41] Alm, J. (1996). Explaining tax compliance. *Exploring the Underground Economy. Kalamazoo WE Upjohn Institute for Employment Research*, 103-128.
[42] Hallsworth, M., List, J. A., Metcalfe, R. D., & Vlaev, I. (2017). The behavioralist as tax collector: Using natural field experiments to enhance tax compliance. *Journal of public economics*, *148*, 14-31.

In such instances, excessively harsh fines and intrusive audits could backfire and undermine tax morale inadvertently.[43]

OECD highlighted the importance of ensuring taxpayer awareness of tax laws and any updates, as voluntary compliance is essential for the tax system's efficacy. Various initiatives aimed at promoting tax compliance were taken, with common methods including mass media, Internet platforms, direct contact, and publications. While most campaigns focus on informing taxpayers about tax laws, some initiatives, particularly those targeting the informal sector, emphasize the societal benefits of tax contributions. In certain cases, campaigns aim to formalize the informal sector by encouraging consumers to demand tax receipts, thereby incentivizing sellers to comply with tax laws in order to retain customers.[44]

World Bank warns that in many low-income countries, tax revenues fall short of providing essential services or achieving sustainable development goals. Tax collection is often inequitable, with high evasion rates among corporations and the wealthy, burdening lower-income groups disproportionately. In a response to the described issue, the Innovations in Tax Compliance (ITC) program seeks to enhance tax compliance in low- and middle-income countries through a comprehensive tax reform approach. The program comprises three main pillars: enforcement, facilitation, and trust. By focusing on building trust between taxpayers and tax administrations, alongside enforcement and facilitation reforms, the program aims to increase "tax morale" and subsequently boost compliance rates. ITC advocates for countries to invest in all three pillars to not only enhance compliance and revenue generation but also to strengthen state capacity, garner political support for further reforms, and foster stronger fiscal agreements between citizens and governments.[45]

[43] Kirchler, E., Muehlbacher, S., Kastlunger, B., & Wahl, I. (2010). Why pay taxes? A review of tax compliance decisions. *Developing alternative frameworks for explaining tax compliance*, *59*.
[44] OECD (2021), *Building Tax Culture, Compliance and Citizenship: A Global Source Book on Taxpayer Education, Second Edition*, Paris: OECD Publishing.
[45] Dom, R., Custers, A., Davenport, S., & Prichard, W. (2022). *Innovations in tax compliance: Building trust, navigating politics, and tailoring reform*. World Bank Publications.

2.3 Challenges and Barriers to Implementing Digitalisation

Introducing digital technologies into tax procedures and administrations presents a range of obstacles. This segment aims to outline the fundamental factors to be taken into account when implementing reforms in digital tax administration. While it does not aim to comprehensively cover all potential challenges or delve deeply into each issue, as the specifics would depend on the context where the measures are implemented, it lists some of the most dominant challenges and barriers to digitalisation of the tax administration that are common worldwide.

Namely, what concerns taxpayers could be the complexity of digital tax regulations, potential privacy and data security issues, or the digital divide affecting specific segments of the population. OECD recognised several challenges. These include: [46]

- the potential for base erosion and profit shifting by multinational enterprises in the digital economy,
- the need to redefine nexus and taxation rights in the face of borderless digital operations,
- the complexities surrounding the collection and reporting of taxes in digital transactions,
- the demand for enhanced capabilities in managing data and technology in tax administration, and
- the necessity for international cooperation to effectively address these challenges and develop common approaches and standards for the taxation of digital activities.

The European Parliament recognizes that various legal and technology-related obstacles emerge concerning coordinated efforts at the EU level regarding digitalization. The regulatory hurdles include:[47]

[46] OECD. "Tax Challenges Arising from Digitalisation – Report on Pillar One Blueprint". (2020). OECD
[47] Owens, J., Lazarov, I., & Nathalia Oliveira Costa, N. (2021). Exploring the opportunities and challenges of new technologies for EU tax administration and policy. *Policy Department for Economic, Scientific and Quality of Life Policies. Directorate-General for Internal Policies. European Parliament*.

- establishing a legal foundation and proving hindrances to cross-border movement or significant competition distortions without harmonization;
- safeguarding the rights of taxpayers, particularly regarding the privacy of individuals; and
- determining the responsibilities of intermediaries like banks, trading platforms, or advisors in furnishing structured data for automatic tax liability calculation and their liability if information accuracy falls short.

At the same time, the Parliament highlights that new technologies offer various prospects, such as enhancing e-services, analyzing large datasets, refining risk management, and automating tax procedures. However, they also present certain drawbacks. For instance, cryptocurrencies, being digital assets beyond direct governmental oversight, pose risks including potential utilization for illicit purposes, volatility in exchange rates, susceptibility to manipulation, and tax-related complexities.[48]

At the same time, the World Bank suggests the following list of barriers to an effective implementation of digitalized tax system:[49]

- Insufficient hard infrastructure,
- Resistance to adopting new technology among taxpayers and tax officials,
- Inadequate approach and strategy, and
- Privacy and confidentiality concerns.

Insufficient hard infrastructure, such as reliable electricity and internet connectivity, as well as technology malfunctions during peak usage times or intermittent operation, can lead to user dissatisfaction. Rural and less educated taxpayers, who often have limited internet access, are particularly disadvantaged by inadequate infrastructure. Tax authorities can mitigate these challenges by providing alternative solutions tailored to users with limited internet access, such as offline declaration and payment options accessible via non-smart phones.

[48] *Ibid.*
[49] Okunogbe, O., & Santoro, F. (2023). The Promise and Limitations of Information Technology for Tax Mobilization. *The World Bank Research Observer*, *38*(2), 295-324.

Resistance to adopting new technology among taxpayers and tax officials can stem from various factors, including lack of awareness, training, and perceived high costs of adoption. Additionally, concerns about potential corruption and tax avoidance may arise. More tech-savvy taxpayers might exploit system loopholes, while others may distrust unfamiliar solutions. Tailored approaches are necessary, with increased enforcement for sophisticated users and trust-building efforts for less IT-proficient taxpayers. Tax officials may also resist technology due to entrenched habits, corruption tendencies, and lack of awareness. Addressing this requires effective change management strategies, targeted training, and ongoing support.

Successful implementation of new technologies depends on strong leadership buy-in and a coherent long-term national strategy. Sequential adoption of technology is essential due to interdependencies among various functions. For instance, integrating an automated tax administration system requires first cleaning up pre-existing data. Similarly, retraining tax officials should precede the introduction of new technology and continue post-implementation.

Systematic data sharing between revenue authorities and other entities is often hindered by privacy and confidentiality concerns. Establishing a centralized automated platform accessible to government agencies and banks can facilitate taxpayer identification and data verification. Additionally, updating regulatory frameworks to address cybersecurity risks ensures privacy protection and guards against data breaches as technology advances.

3 DIGITALISATION OF TAX SYSTEM IN SERBIA

After providing an adequate theoretical setting, it is possible to focus on analysing the impact of digitalisation on tax enforcement and tax compliance in the case of Serbia. The following paragraphs will be dedicated to providing a better understanding of the ways in which digitalisation changes the lives of taxpayers in terms of fulfilling their obligations in Serbia. This section will cover the overall characteristics and performance of the existing Serbian tax system in order to understand the ongoing process of its digital transformation. Based on the available data, the author aims to analyse the data accessibility and accuracy within the tax system in Serbia in the period after 2009, without analysing the details of the transition period and its echo in the tax realm. The author strives to assess the effects digital monitoring has had – and could have – on the tax evasion. Furthermore, the question of voluntary compliance in relation to digitalisation is analysed, only to come to the point at which a comparative analysis of compliance rates before and after digitalization can be conducted.

3.1 Characteristics and Performances of Serbia's Tax System

Tax systems of Serbia address three main areas: consumption, income, and property. Consumption-related taxes include VAT, Excise, and taxes on non-life insurance premiums. Income-related taxes involve corporate and personal income tax. Property-related taxes cover static property, inheritance, gifts, and usage taxes on vehicles, vessels, aircraft, and firearms. Contributions to social insurance funds are a form of taxation. Personal income tax is paid on various income sources throughout the year, with additional annual taxes for those exceeding a certain income threshold.[50] Serbia's tax principles include sufficiency, elasticity, efficiency, moderate burden, diverse tax sources, system stability, legality, and flexibility.[51]

Serbia's tax system is distinctive due to its heavy taxation on labor and comparatively lighter taxation on profits and property when compared to European countries, especially the ones of the

[50] The Government Of The Republic Of Serbia (2024). *Tax system Job for the Future*. Available at: https://www.srbija.gov.rs/tekst/en/130076/tax-system-.php Accessed on 09.04.2024.
[51] *Ibid.*

European Union (EU).[52] In the post-pandemic period, Serbia's public revenues were around 41,5% of GDP,[53] which is slightly more than the average for EU countries (41,2%) and corresponds to the average for the same ratio of the Eurozone (41,9%).[54] The tax-to-GDP ratio for Serbia was around 25% according to the data from the beginning of 2024. The data shows that the tax-to-GDP ratio for the Western Balkan region was around 20% for Albania, around 22% for Bosnia and Herzegovina, North Macedonia marked the level of 20%, while Montenegro marked 31.6%.[55]

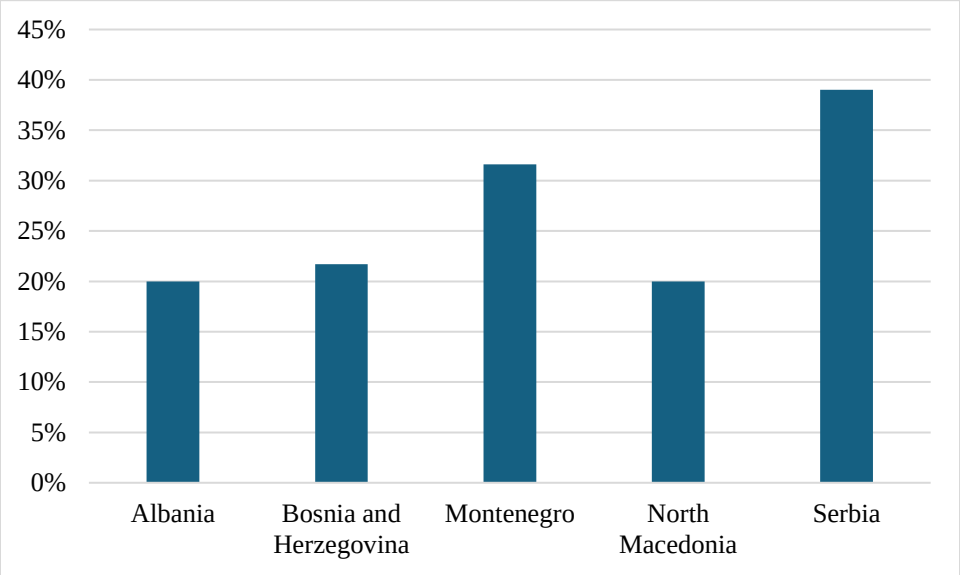

Figure 2: Tax-to-GDP ratio, Western Balkan Region, March, 2024

Source: CEIC. (2024). *Tax Revenue: % of GDP by Country Comparison*. Available at: https://www.ceicdata.com/en/indicator/serbia/tax-revenue--of-gdp accessed on: 17.08.2024.

Over the past decades, Serbia's tax system has undergone substantial changes, primarily aimed at aligning it with the tax systems of the European Union.[56] The post-2000 tax reforms aimed for economic efficiency, depoliticization, reduced public spending, EU compliance, and increased

[52] Anicic, J., Laketa, M., Radovic, B., Radovic, D., & Laketa, L. (2012). Tax policy of Serbia in the function of developing the economic system. *UTMS Journal of Economics*, *3*(1), 33-43.
[53] CEIC Data. (2024). Serbia Tax Revenue: % of GDP. Available at: https://www.ceicdata.com/en/indicator/serbia/tax-revenue--of-gdp Accessed on 01.04.2024.
[54] Eurostat. (2023). Tax revenue statistics. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Tax_revenue_statistics#:~:text=As%20a%20ratio%20of%20GDP,2022%20remained%20stable%20at%2041.9%20%25. Accessed on 01.04.2024.
[55] CEIC Data. (2024). Serbia Tax Revenue: % of GDP. Available at: https://www.ceicdata.com/en/indicator/serbia/tax-revenue--of-gdp Accessed on 01.04.2024.
[56] Anicic, J., Laketa, M., Radovic, B., Radovic, D., & Laketa, L. (2012). Tax policy of Serbia in the function of developing the economic system. *UTMS Journal of Economics*, *3*(1), 33-43.

revenue, yet implementation has been challenging.[57] During the initiation of the economic system's transition towards establishing a market economy, a significant overhaul of Serbia's tax system took place in 2001 and 2002. This overhaul included the adoption of the new Law on the Budget System and the Law on Tax Procedure and Tax Administration, which serve as overarching regulations governing the institutional framework of public finance and tax administration in Serbia. Additionally, several new laws were enacted to regulate fundamental tax aspects, such as the Personal Income Tax Law, and the Law on Mandatory Social Security Contributions (introduced later in 2004), the Corporate Income Tax Law, the Law on Property Taxes, the Law on Value Added Tax (VAT), and the Law on Excise Duties. This comprehensive reform established a modernized structure for the Serbian tax system, bringing it closer in comparison to the tax systems of contemporary European nations.[58]

Serbian tax system can be analysed through direct and indirect taxation practices, since generally taxes can be classified into these two categories based on how they are paid, who ultimately shoulders the burden, and the degree to which the burden can be transferred. Direct taxes are those paid directly by taxpayers to the tax authority, with the liability and burden falling on the same individual. They are collected by both central and state governments and encompass various types, including income tax, corporate tax, wealth tax, property tax, and gift tax. On the other hand, indirect taxes are imposed on the production or consumption of goods and services, with the burden capable of being shifted to another party. Examples of indirect taxes include property tax, VAT, customs duty, and excise duties.

In Serbia, direct taxes account for around 55% of the total tax revenues, which can be considered (relatively) favourable[59] in terms of suggestion from experts that the two categories should be balanced for an economic growth.[60] The regulations concerning the taxation of Personal income are outlined in the Law on Personal Income Tax (PIT Law) and its associated secondary

[57] Stevanović, M., & Gajić, A. (2013). Analysis of development of the tax system in Serbia. *Annals of the Oradea University*, *2*, 300-304.
[58] Ranđelović, S. (2021). Economic performances of the tax system of Serbia. *Revija Kopaoničke škole prirodnog prava*, *3*(1), 189-203.
[59] *Ibid.*
[60] Bazgan, R. M. (2018). The impact of direct and indirect taxes on economic growth: An empirical analysis related to Romania. In *Proceedings of the international conference on business excellence* (Vol. 12, No. 1, pp. 114-127).

regulations.[61] In 2001, a hybrid model comprising two phases of income taxation system for citizens – scheduler and comprehensive – was introduced.[62] Generally, Serbia's personal income tax system operates under a scheduler taxation model, where various types of income are subject to distinct tax rates and assessment rules. In the scheduler phase, income from all sources is taxed when earned, with each type of income subject to specific rules. In the comprehensive phase, an annual tax is levied on income exceeding a set limit from the previous year.[63] Resident taxpayers with annual income surpassing the threshold specified by the PIT Law are obligated to pay supplementary annual income tax at year-end.[64] This law aimed primarily at reducing the effective tax burden and increasing progressivity. Changes included reducing tax rates for salaries, self-employment, and capital gains, along with adjusting the income tax threshold relative to the average salary. These amendments also targeted curbing tax evasion and promoting certain behaviors like investing in private pensions.[65]

Despite these changes, Serbia's personal income tax system remains mixed, with varying rules and tax burdens depending on income type, though still deviating from principles of equity in taxation.[66] Nevertheless, Serbia's tax burden on personal income is comparatively low in Europe, favoring economic efficiency (Table 1). The analysis indicates tax harmonization across Europe, particularly evident in corporate income tax rates, which generally vary by only 1 percentage point among European countries. Serbia stands out significantly with a maximum corporate income tax rate of 15%, making it highly attractive for investments compared to the EU average of around 23%. Similarly, Serbia boasts one of the lowest VAT rates in Europe. In terms of income tax rates, Serbia's progressive system imposes lower rates compared to Benelux and Southern European countries. For taxable income exceeding specific thresholds, Serbia applies rates of 10% and 15%.

[61] Karanović. (2019). Tax System in Serbia (I). Available at: https://www.ilpabogados.com/en/tax-system-in-serbia-i/ Accessed on: 30th of March, 2024
[62] Ranđelović, S. (2021). Economic performances of the tax system of Serbia. *Revija Kopaoničke škole prirodnog prava*, *3*(1), 189-203.
[63] *Ibid.*
[64] Karanović. (2019). Tax System in Serbia (I). Available at: https://www.ilpabogados.com/en/tax-system-in-serbia-i/ Accessed on: 30th of March, 2024
[65] Ranđelović, S. (2021). Economic performances of the tax system of Serbia. *Revija Kopaoničke škole prirodnog prava*, *3*(1), 189-203.
[66] *Ibid.*

This highlights labor taxation as the primary source of tax burden, with Serbia aiming to maintain a competitive workforce through low labor tax rates.[67]

Table 1: Comparison of the most significant types of taxes between Serbia and selected EU countries

Country	Corporate Income Tax	VAT	Personal Income Tax	Social Security Contributions
Italy	27.8	22 (5, 10)	43	40
Belgium	25	21 (6, 12)	50	40
Netherlands	25	21 (9)	49.5	28
Luxembourg	24.9	17 (18, 3)	45	27
Spain	25	21 (10)	47	37
Greece	24	24 (6, 13)	44	36
Serbia	15	20 (10)	10, 15	35

Source: Stojiljković, M., Raičević, J., Đurović, J., & Radovanović, D. (2023, December). Comparative analysis of the most significant tax forms in Serbia and selected countries of EU. In *International Scientific Conference on Economy, Management and Information Technologies* (Vol. 1, No. 1, pp. 233-236); PwC. (2024). Social security contributions. Available at: https://taxsummaries.pwc.com/italy/individual/other-taxes#:~:text=The%20total%20social%20security%20rate,Employee's%20charge%20is%20around%2010%25. Accessed on 15.08.2024; PwC. (2024). Social security contributions. Available at: https://taxsummaries.pwc.com/belgium/corporate/other-taxes#:~:text=The%20employees'%20social%20security%20contributions,(i.e.%20'employment%20bonus'). Accessed on 15.08.2024; PwC. (2024). Social security contributions. Available at: https://taxsummaries.pwc.com/netherlands/corporate/other-taxes#:~:text=Social%20security%20contributions,amount%20to%20the%20tax%20authorities. Accessed on 15.08.2024; LPG. (2024). *Social security contributions in the Grand Duchy of Luxembourg*. Available at: https://www.fiduciaire-lpg.lu/en/publications/social/social-security-contributions-grand-duchy-luxembourg Accessed on 15.08.2024; PwC. (2024). Social security contributions. Available at: https://taxsummaries.pwc.com/spain/individual/other-taxes#:~:text=Social%20security%20contributions&text=In%20Spain%2C%20the%20minimum%20monthly,e.g.%201.50%25%20office%20work). Accessed on 15.08.2024; PwC. (2024). Social security contributions. Available at: https://taxsummaries.pwc.com/serbia/individual/other-taxes#:~:text=The%20minimum%20tax%20base%20for,average%20monthly%20salary%20published%20by Accessed on 15.08.2024; TEKA. (2024). *Social Security Basics.* Available at: https://teka.gov.gr/en/social-security-basics-0 Accessed on 15.08.2024.

[67] Stojiljković, M., Raičević, J., Đurović, J., & Radovanović, D. (2023, December). Comparative analysis of the most significant tax forms in Serbia and selected countries of EU. In *International Scientific Conference on Economy, Management and Information Technologies* (Vol. 1, No. 1, pp. 233-236).

Reforms to the mandatory social insurance contribution system were initiated in 2001,[68] followed by the adoption of the new Law on Contributions for Mandatory Social Insurance in 2004.[69] These reforms aimed to consolidate existing systems by expanding the contribution base and merging three pension funds into one. The reform left certain issues concerning the taxation of citizens' income unresolved or in the early stages of resolution, resulting in the emergence of new complications, problems, and shortcomings, as it has shown lack of horizontal fairness and a significantly lower level of vertical fairness compared to systems in other European countries. These characteristics or deficiencies gave rise to a new problem: the tax structure biased in allocation, relatively complex, and administratively demanding due to the differentiation of rules for taxing income from various sources.[70] Some authors suggested that the tax reform of 2001 placed the greatest fiscal burden on the lowest-paid workers, being very regressive.[71] Arandarenko in his work with Stanić (2006),[72] and his work from 2009,[73] argues that due to the pronounced regressiveness of the wage levy in Serbia, a highly progressive comprehensive income tax system with three distinct tax rates is an optimal solution, looking upon the Western countries. However, Altiparmakov (2013) suggested that implementing such a tax system would incur significant administrative costs for both tax authorities and taxpayers, which is one of the leading reasons why flat-tax systems have been prevailing in Eastern Europe. Additionally, Altiparmakov and Vesnić (2007) showed through micro-simulations of citizens' registered incomes that combining taxable income from various sources under a comprehensive tax would not necessarily increase budget revenues, and raised concerns about the practicality of introducing a comprehensive income tax in Serbia.[74] In 2023, Simović proposed that increasing the non-taxable portion of salaries to 67% could raise the net income of low-wage workers, aligning minimum wages with union demands. Simović presented two models of progressive income taxation, highlighting that most of Europe practices progressive taxation, which research shows increases public willingness to pay taxes. According to the models, employer costs remain unchanged, with tax rates ranging from 10% to 42% for higher wages, and one model suggests a larger non-taxable portion to boost lower wages. Although this approach might slightly reduce budget revenues, he argued that the impact is minimal and could be offset by more rational public spending.[75]

[68] Petraković, D. (2007). Reform of the pension insurance system in Serbia. *Industrija*, *35*(2), 29-46.
[69] Ranđelović, S. (2021). Economic performances of the tax system of Serbia. *Revija Kopaoničke škole prirodnog prava*, *3*(1), 189-203.
[70] Kovačević, M., Ilić, J., & Damnjanović, R. (2017). Evolucija poreza na dohodak u Srbiji. *Oditor*, *3*(1), 7-22.
[71] Arandarenko, M i Stanić, K (2006) „Background paper on Labor Costs and Labor Taxes in Serbia: Labor Market Assesment", World Bank.
[72] Arandarenko, M., Stanić, K. (2006). *Background paper on Labor Costs and Labor Taxes in Serbia: Labor Market Assesment*. World Bank.
[73] Arandarenko, M. (2009). Mogući pravci reforme oporezivanja rada. *Kvartalni monitor br*, *18*, 67-69.
[74] Altiparmakov, N. (2013). Da li su fiskalni nameti na zarade u Srbiji regresivni. *FS Istraživački papir*, *13*(03).
[75] Paragraf Lex. (2023). *Mogućnosti uvođenja progresivnog oporezivanja zarada: Povećanjem neoporezivog dela zarade do većeg minimalca.* Available at: https://www.paragraf.rs/dnevne-vesti/111223/111223-vest8.html Accessed on: 17.08.2024.

Over time, amendments to the law gradually reduced the contribution rate, and the tax burden on citizens' income averages is considered moderate compared to EU countries. The property tax system, established in 2001, comprises static and dynamic segments, with rates varying based on property type and ownership status. Inheritance and gift taxes, as well as a tax on the transfer of absolute rights, are also part of Serbia's taxation framework, with differentiated rates and exemptions. Despite amendments, Serbia's property tax system remains largely aligned with European standards, though its impact is limited by selective coverage and exemption regimes.[76]

The indirect tax system in Serbia comprises general and selective sales taxes. Initially regulated by the 2001 Law on Sales Tax, a single-phase tax on goods import and end-consumer sales was introduced, along with a cumulative all-phase tax on service turnover at a rate of 20%. To meet requirements for the Stabilization and Association Agreement with the EU and combat tax evasion, the retail sales tax was replaced with a VAT in 2005. The VAT system follows the European model, broadly taxing goods, services, and imports, with liability calculated using the credit method and international trade taxed based on destination principles. Since 2005, Serbia's standard VAT rate has been 18%, with a reduced rate of 8% for specific goods and services. In efforts for fiscal consolidation from 2012 to 2014, both rates were increased to 20% and 10%, respectively. Financial intermediation being VAT-exempt led to the introduction of a 5% "tax on sales of non-life insurance services". Additionally, the unified excise tax system introduced in 2001 aimed to consolidate the tax system by taxing goods with negative externalities or luxury status. The Excise Law, established in 2001 and amended 40 times since, covers oil derivatives, tobacco, alcohol, beverages, coffee, salt, and luxury items. Amendments included expanding the scope to items like electricity and e-cigarette liquids and adjusting rates, with biannual increases tied to inflation and additional hikes to comply with EU regulations.[77]

3.2 Digital Transformation of Tax System in Serbia

As previously stated, tax administration and compliance processes could be streamlined through digitalization. Tax authorities can use technology to increase risk assessment skills, automated

[76] Ranđelović, S. (2021). Economic performances of the tax system of Serbia. *Revija Kopaoničke škole prirodnog prava*, *3*(1), 189-203.
[77] *Ibid.*

reporting systems, and data collecting and analysis. Online filing and payment systems are only two examples of how digital platforms can simplify taxpayer interactions and make it easier for people and businesses to comply with their tax obligations. From a tax administration standpoint, the digitization of processes and the utilization of advanced big data analysis enhance efficiency, streamline administration, and enhance tax oversight. This trend in taxation could potentially culminate in a scenario where all taxpayers are integrated into the system, and tax data is accessible in real or near-real-time, allowing taxpayers to settle all tax obligations online.[78]

The Serbian Tax Administration initiated its digitalization efforts in 2004/2005 with the introduction of online cash register readings.[79] Subsequently, the first digitalized tax forms for VAT, payroll taxes, and personal income tax were introduced in the following years. In 2010, e-Government portal was officially launched. Over the following years, significant progress was achieved with the establishment of the Office for IT and e-Government, facilitating the implementation of crucial projects such as the State Data Centre, e-Payment, e-Paper, and e-Inspector, all integral to the digitalization process of the Tax Administration.[80]

The external portal ePorezi (eTax) serves as an entry point to access state administration services, aligning with the recommendations of the eSEE Agenda+ for advancing the information society.[81] Through the ePorezi platform, the Serbian Tax Administration accepts electronic tax returns from taxpayers. Corporate income tax, VAT, personal income tax, and self-employment tax returns are just a few forms taxpayers can electronically complete and send. A system for electronic tax payments has also been implemented by the Tax Administration, allowing for electronic payments. By decreasing administrative expenses and the time needed to handle papers, these digital

[78] Bačanin, V. (2022). E-fakturisanje u Srbiji: Kratak osvrt na značaj, uvođenje i primenu sa poreskopravnog aspekta. In *Sudski postupak–pravda i pravičnost: međunarodna naučna konferencija: zbornik radova 35. susreta Kopaoničke škole prirodnog prava-Slobodan Perović, Kopaonik, 13.–17. decembar 2022. Tom 2= Court proceedings–justice and fairness: international scientific conference: proceedings of the 35th Meeting of Kopaonik School of Natural Law-Slobodan Perović, Kopaonik, 13-17 December 2022. Vol. 2*. Beograd: Kopaonička škola prirodnog prava-Slobodan Perović.

[79] Pravilnik o postupku fiskalizacije, sadržaju evidencije o ovlašćenim servisima i serviserima i izgledu, sadržaju i načinu vođenja dosijea i servisne knjižice fiskalne kase ("Sl. glasnik RS", br. 140/2004 i 44/2018 - dr. zakon) Available at: https://www.paragraf.rs/propisi/pravilnik-o-postupku-fiskalizacije-sadrzaju-evidencije-o-ovlascenim-servisima-i-serviserima.html Accessed on: 01.04.2024.

[80] Pitić, G., Radosavljević, G., Babin, M., & Erić, M. (2019). Digitalization of the tax administration in Serbia. *Ekonomika preduzeća*, *67*(1-2), 131-145.

[81] Stability Pact – eSEEurope Initiative. (2017). eSEEurope Agenda for the Development of the Information Society a cooperative effort to implement the Information Society in South Eastern Europe. Available at: https://www.eseeinitiative.org/file/2017/08/eSEEurope_Agenda.pdf Accessed on: 31st of March, 2024

solutions make it easier to file taxes and make payments. Additionally, computerised tax filing and payment allow for better process monitoring, reduced potential errors, and increased transparency of the Serbian tax system.

The Tax Administration's electronic system streamlines the process for taxpayers to submit tax returns and information across several fronts. Firstly, it enhances communication by offering uninterrupted access to services, free of charge and irrespective of location, 24/7. Additionally, it expedites the submission process, making it faster, simpler, and more convenient. Moreover, it curtails the need for paper documentation, reducing environmental impact and promoting sustainability. Furthermore, it minimizes errors compared to traditional paper submissions, where manual data entry is prone to mistakes. This not only enhances accuracy but also boosts the efficiency of tax officials. The system also empowers users by enabling electronic transactions, thereby transferring authority seamlessly. Furthermore, it shortens the timeframe for taxpayers to submit their returns, contributing to greater efficiency. Lastly, the public portal E-taxes offers these services free of charge, fostering economic development.[82]

This portal is among the metrics utilized to assess the progress of information society development within a nation.[83] When presented with the new option to submit all tax forms online via the specialized web portal "ePorezi", the majority still preferred paper forms as a more convenient option. Hence, there remains considerable room for further digitalization efforts within the Serbian Tax Administration. Given the current inefficiencies compared to EU standards, digitalization has the potential to expedite alignment with EU norms.[84]

[82] Tanasijević, J., Vidojević, D., & Atanasijević, M. S. ePorezi–uvođenje Integrisanog informacionog sistema Poreske uprave za elektronsko podnošenje poreskih prijava ePorezi–implementation of an Integrated information system at Tax Administration for electronic submission of tax returns. YU INFO 2012. Kopaonik: 12-17.
[83] Tanasijević, J., Vidojević, D., & Atanasijević, M. S. ePorezi–uvođenje Integrisanog informacionog sistema Poreske uprave za elektronsko podnošenje poreskih prijava ePorezi–implementation of an Integrated information system at Tax Administration for electronic submission of tax returns. YU INFO 2012. Kopaonik: 12-17.
[84] Pitić, G., Radosavljević, G., Babin, M., & Erić, M. (2019). Digitalization of the tax administration in Serbia. *Ekonomika preduzeća*, *67*(1-2), 131-145.

Table 2: Functionalities of ePorezi system for different agents

For all taxpayers (citizens and enterprises)	• Preparation and submission of signed applications:
	  ○ Preparation of tax returns or downloading of returns in XML format
	  ○ Validation of the correctness of the tax return
	  ○ Electronic signing of tax returns with a time stamp
	  ○ Integration with the TSA (Time Stamp Authority) state-qualified system
	  ○ Electronic submission of signed tax returns
	• Search and review of electronically and paper submitted applications:
	  ○ Applications that are being prepared, and which are submitted electronically
	  ○ Overview of all applications submitted electronically through the portal and in paper form at the counter, applications that are in the archives of the Tax Administration
	  ○ Overview of the status of applications in the life cycle
	  ○ Printing applications
	• Insight into the state of the taxpayer's account
	• Administration of authority for the taxpayer
	  ○ Access controlled by digital certificates
	  ○ System for managing the authorizations of natural persons on behalf of the taxpayer
	  ○ The services can be used on behalf of all taxpayers for whom the natural person has the authority.
	  ○ Viewing, adding and canceling the authorization of a given taxpayer.
	  ○ Only authorizations that do not indicate that the person is the legal representative of a taxpayer can be added and removed through the eTaxes portal.
	• User identification systems through electronic certificates for external users - taxpayers Integration with CA (Certification Authority) bodies and their authorization and authentication rules that are qualified for issuing certificates at the state level
	• Checking the CRL list
	• User identification system using the Active Directory for internal users - employees of the Tax Administration and system administrators
	• The system for selecting the taxpayer on whose behalf the use of eTaxes electronic services is completed, the basic authority that a natural person has in the Unified Register of Taxpayers

For tax administration employees	• Overview of statistical, summary reports according to different criteria • Search and review of applications for taxpayers • Administration of accessing users (ability to block a specific user) • Portal content management system (ContentManagement System - CMS)

Source: Tanasijević, J., Vidojević, D., & Atanasijević, M. S. ePorezi–uvođenje Integrisanog informacionog sistema Poreske uprave za elektronsko podnošenje poreskih prijava ePorezi–

implementation of an Integrated information system at Tax Administration for electronic submission of tax returns. YU INFO 2012. Kopaonik: 12-17.

In 2019, the World Bank has approved two new projects, the Enabling Digital Governance Project and the Tax Administration Modernization Project, with a combined value of $102 million. These initiatives aim to enhance public services for Serbian citizens, making them faster, more transparent, and less costly. Additionally, they seek to improve revenue collection for the Government of Serbia while streamlining the tax system and reducing corruption. The Enabling Digital Governance Project, valued at $50 million, will focus on digitalizing public services in Serbia. It aims to completely digitize thirty essential services by project completion, with an additional 120 services identified for future digitalization efforts.[85] The project's objective is to simplify processes, increase efficiency, and lower service costs for the public, ultimately reducing opportunities for corruption and encouraging economic investments. The Tax Administration Modernization Project, valued at $52 million, aims to improve revenue collection efficiency and simplify tax payments for citizens and businesses. This project addresses Serbia's lagging performance in tax-related indicators, as highlighted in the World Bank's Doing Business annual report. It will finance enhancements to the legal framework, support the automatization of tax clearance certificate issuance, and upgrade the hardware and software capabilities of the Serbian Tax Administration. These improvements aim to reduce the compliance burden for taxpayers, enhance investment incentives, and boost tax collection for the Government of Serbia.[86]

Over the past decade, Serbia has made substantial progress toward the digitisation of the tax administration to boost the system's effectiveness, transparency, and services. The Law on Electronic Invoicing entered into force in May 2021. Officials from the executive branch emphasize that this legislation, forming a crucial component of structural reforms aimed at significantly enhancing Serbia's business environment, will combat the informal economy, boost VAT revenue, narrow the VAT gap, and streamline and modernize tax oversight processes. Similar positive sentiments are echoed by authors of published guides for implementing the electronic

[85] World Bank. (2019). *Creating Better Public Services and a Modern Tax System in Serbia, with Help from World Bank*. Available at: https://www.worldbank.org/en/news/press-release/2019/04/24/creating-better-public-services-and-modern-tax-system-in-serbia-with-help-from-world-bank accessed on 15.08.2024.

[86] The World Bank. (2019). International Bank For Reconstruction And Development Project Appraisal Document On A Proposed Loan In The Amount Of Eur 43.80 Million (Us$50 Million Equivalent) To The Republic Of Serbia For An Enabling Digital Governance Project. Belgrade: The World Bank.

invoicing system in Serbia. They highlight its innovative and contemporary nature and anticipate that its implementation will promote transaction transparency, facilitate financial, temporal, and spatial efficiencies, bolster document security and environmental preservation, and positively impact tax collection efficiency, narrowing the tax gap, and reducing administrative burdens. However, a segment of the professional community critiques the system's premature and inadequate implementation.[87]

3.3 Data Accessibility and Accuracy within the Tax System in Serbia

The access to timely and accurate data is crucial for the tax administration, especially for decision-making and planning, including policy formulation. Furthermore, it is believed – and shown in several cases – that data accessibility and accuracy can lead to improved taxpayer compliance and revenue collection.[88] This is the consequence of a) improved ability of the authorities to spot the agents that avoid taxes and b) improved voluntary tax compliance. While the first effect is self-explanatory, the second one requires pointing back to the findings of Hallsworth et al. (2017), who investigated the behaviour of taxpayers.[89] Namely, when confronted with real-time data about tax compliance, taxpayers could have the incentive to take part in filling out their citizen duty in order to get the feeling of being a part of the community.

Serbian tax administrators have recently embraced digital transformation to address challenges like uncertain revenue forecasts and budget deficits. Beyond solving immediate problems, digitalization has the potential to shift tax authorities from reactive to proactive roles, improving

[87] Bačanin, V. (2022). E-fakturisanje u Srbiji: Kratak osvrt na značaj, uvođenje i primenu sa poreskopravnog aspekta. In *Sudski postupak–pravda i pravičnost: međunarodna naučna konferencija: zbornik radova 35. susreta Kopaoničke škole prirodnog prava-Slobodan Perović, Kopaonik, 13.–17. decembar 2022. Tom 2= Court proceedings–justice and fairness: international scientific conference: proceedings of the 35th Meeting of Kopaonik School of Natural Law-Slobodan Perović, Kopaonik, 13-17 December 2022. Vol. 2*. Beograd: Kopaonička škola prirodnog prava-Slobodan Perović.

[88] Mukuwa, V., & Phiri, J. (2020). The effects of e-services on revenue collection and tax compliance among SMEs in developing countries: a case study of Zambia. *Open Journal of Social Sciences*, *8*(01), 98; Li, J., Wang, X., & Wu, Y. (2020). Can government improve tax compliance by adopting advanced information technology? Evidence from the Golden Tax Project III in China. *Economic Modelling*, *93*, 384-397.

[89] Hallsworth, M., List, J. A., Metcalfe, R. D., & Vlaev, I. (2017). The behavioralist as tax collector: Using natural field experiments to enhance tax compliance. *Journal of public economics*, *148*, 14-31.

business operations and individual lives. However, achieving this transformation requires prioritizing taxpayers and aligning strategies with broader government digital initiatives.[90]

While Serbian tax system has been undergoing the process of digitalization, there is still an issue related to data accessibility in it. Namely, the digital practice is developing, but the time-consuming processes that the tax authorities are supposed to conduct are still slowing down the whole system. Therefore, it is possible to talk about common challenges taxpayers face in accessing tax data. Above all, while there are many new initiatives aiming to further improve the tax system in Serbia, the activities that still need to be done manually often take too long. At the same time, the idea of centralizing governmental services and enabling immediate access to all the data at the same place, ensuring that they are updated, has not been fully realized yet. More precisely, the digital realm of Serbian tax system is divided into two levels – local, that is digitally formed in the platform of Local Tax Administration (Lokalna poreska uprava – LPA)[91] and national, that is ePorezi, which exists in a form of a specially designed application[92]. The two platforms are separated, and in addition to that, there is another digital platform for the Business Registers Agency (Agencija za privredne registre – APR)[93]. The three platforms are not fully connected and the data is not completely integrated, which can be considered a barrier to access of the accurate data within the tax system. Moreover, it means that the taxpayers rely on fragmented data sources, which is also connected to the problem of accuracy of that data.

However, it has to be highlighted that the three abovementioned platforms are becoming increasingly user-friendly and are more accessible to the citizens. The government has been working on improving the existing solutions towards more accessible, centralized platforms. One of the announced improvements includes the feature of eBolovanje, which is e-sick leave. The implementation of the eBolovanje system is poised to significantly reduce instances of misuse and enhance overall system efficiency. Digitalization will facilitate real-time verification of employee

[90] Bertrand, A. (2022). *How can harnessing tax data create value for all?*. Available at: https://www.ey.com/en_gl/insights/government-public-sector/how-can-harnessing-tax-data-create-value-for-all accessed on 17.04.2024.
[91] LPA. (2024). *Lokalna poreska administracija.* Available at: https://lpa.gov.rs/jisportal/ accessed on: 17.04.2024.
[92] Poreska uprava Republike Srbije. (2024). *ePorezi.* Available at: https://www.purs.gov.rs/sr/e-porezi/portal.html accessed on 17.04.2024.
[93] APR. (2024). *eServisi*. Available at: https://www.apr.gov.rs/%D1%83%D1%81%D0%BB%D1%83%D0%B3%D0%B5.1548.html accessed on 17.04.2024.

data, including their tenure and medical records, while also enabling comprehensive monitoring, analysis, and reporting capabilities to swiftly identify irregularities and potential misuse. The primary objective is to streamline the process for patients by eliminating the need to physically submit documentation while on sick leave and to expedite salary payments during medical absences. However, the prevalence of misuse of sick leave, such as fraudulent sick leave claims, poses considerable challenges to the economy, with instances of over 10% of employees simultaneously on extended medical leave throughout the year being a common occurrence.[94] Once this feature – alongside many others – is included in the eUprava (eGovernment) platform, it would offer more accurate tax data.

3.4 Digital Monitoring and Its Effects on Tax Evasion in Serbia

Tax evasion poses a significant challenge in Serbia, impacting various aspects of the economy and creating an environment of unfair competition. This problem diminishes resources available for public services and goods while undermining public policies. Moreover, informal employment practices restrict individuals' access to essential rights, social protection, and opportunities for professional growth and skill development.[95] In response to these challenges, the Tax Administration of Serbia has embarked on a series of reforms as part of its 2015-2020 and 2021-2025 Transformation Programs.[96] While progress has been made in enhancing tax collection efficiency, further enhancements are necessary, particularly in areas such as personal income taxes, social security contributions, and VAT. There is an urgent need for the development of new strategies and the exploration of innovative approaches to identify and address emerging forms of tax evasion.[97]

[94] eKapija. (2024). eBolovanje System to Be Introduced – Employees Will No Longer Have to Bring Doctors' Certificates to Employers, and Here Are All the New Features. Available at: https://www.ekapija.com/en/news/4586324/ebolovanje-system-to-be-introduced-employees-will-no-longer-have-to-bring accessed on 23.04.2024.

[95] Skopljak, Z., Atanasijević, J. (2024). *Tackling Tax Evasion in Serbia with Big Data.* Available at: https://blogs.worldbank.org/en/governance/tackling-tax-evasion-serbia-big-data accessed on 22.04.2024.

[96] World Bank Group. (2019). *Serbia - Tax Administration Modernization Project (English).* Available at: http://documents.worldbank.org/curated/en/590421554736173969/Serbia-Tax-Administration-Modernization-Project accessed on 22.04.2024

[97] Skopljak, Z., Atanasijević, J. (2024). *Tackling Tax Evasion in Serbia with Big Data.* Available at: https://blogs.worldbank.org/en/governance/tackling-tax-evasion-serbia-big-data accessed on 22.04.2024.

More precisely, in 2018, the Tax Administration of Serbia collaborated with the Faculty of Technical Science at the University of Novi Sad (FSUNS) to integrate big data into its compliance risk management system. This partnership enabled the utilization of artificial intelligence to analyze large datasets and automatically detect significant deviations, leading to more effective tax monitoring with reduced field visits, increased awareness of voluntary tax reporting, and insights for enhancing voluntary compliance.[98]

Under the Tax Administration Modernization Project of the 2021-2025 Transformation Programme, the World Bank is assisting in tax administration reforms in Serbia.[99] The implementation of the big data project, alongside other reforms undertaken by the STA and the strong performance of the Serbian economy, has resulted in a 70 percent nominal growth in salary tax revenue from 2018 to 2022 – with total tax revenue increasing by as much as 50 percent during the same period.[100] The majority of tax revenues experienced significant real growth in the same period. Data from the IMF and the Ministry of Finance reveal that the share of tax revenues in GDP increased by 2.7 percentage points from 2017 to 2021. Improvements in the labor market, particularly through the growth of formal employment, resulted in a notable rise in income from social security contributions by 1.9 percentage points compared to 2017, with a cumulative increase of 3.2 percentage points compared to 2012. However, part of this rise was influenced by measures taken during the pandemic. The growth in tax revenues was also driven by increases in VAT and corporate income tax, with their shares rising by 0.4 and 0.1 percentage points, respectively, from the previous period, despite no changes in tax rates.[101]

The implementation of e-fiscalization, mandated by the new Law on Fiscalization in Serbia, marks a significant transition for businesses, requiring the adoption of electronic systems for issuing fiscal receipts and monitoring fiscal obligations. This shift, which concluded with the cessation of the Law on Fiscal Cash Registers on May 1st, 2022, entails the use of fiscal cash registers connected to the central database of the Tax Administration. Businesses must acquire and install

[98] *Ibid.*
[99] Tax Administration RS. (2021). *Tax Administration Transformation Programme 2021 – 2025.* Belgrade: Republic of Serbia Ministry of Finance.
[100] Skopljak, Z., Atanasijević, J. (2024). *Tackling Tax Evasion in Serbia with Big Data.* Available at: https://blogs.worldbank.org/en/governance/tackling-tax-evasion-serbia-big-data accessed on 22.04.2024.
[101] Krstić, G., Radulović, B., Atanasijević, J., Lužanin, Z., Danon, M., Kovačević, D. (2023). *Siva ekonomija u Srbiji 2022: procena obima, karakteristike učesnika i determinante*. Beograd: NALED.

these registers, choosing between software or hardware solutions based on their needs. The implementation of e-Fiscalization in Serbia meant an initial cost of approximately 270 euros per company. However, the financial burden for adopting the new fiscal cash registers is largely alleviated by state support. The government provides a direct subsidy of 200 euros to offset these costs.[102] Businesses that have successfully registered their sales premises and obtained a unique identifier for their business locations are eligible to apply for this financial assistance. This measure aimed to ease the transition to the new fiscalization model while promoting compliance and modernization within the business sector. The enterprises who received this help were obliged to start retail sales by the defined date, and to conduct business for at least two years. Otherwise, they would lose their right to financial support and would need to give back the subsidy plus the interest rate.[103] In this way, the possibility of misuse of state aid are minimized.

E-fiscalization offers various benefits, including reduced administrative costs, fewer errors in invoice issuance, expedited transaction processing, and enhanced transparency in fiscal obligation monitoring. Moreover, it aligns with broader digitization trends in business, streamlining operations and reducing costs. Additionally, the introduction of e-invoicing, regulated by the Law on Electronic Invoicing effective January 1st, 2023, brings further efficiencies, cost reductions, and precision compared to paper invoices. These legislative changes underscore the imperative for modernization in business practices, facilitating efficiency, transparency, and compliance, while also supporting the efforts of the Tax Administration in ensuring fiscal integrity. However, the effectiveness of these measures in practice and businesses' adaptation to these modern processes remain to be seen in the years to come. It is important to highlight that it is not an easy task to properly assess the consequences of these measures especially because there is a lack of prior research on this topic in Serbia.[104]

[102] PURS. (2022). *Danas ističe rok za prijavljivanje za subvencije za prelazak na novu fiskalizaciju.* Available at: https://www.purs.gov.rs/sr/eFiskalizacija/novosti/8180/danas-istice-rok-za-prijavljivanje-za-subvencije-za-prelazak-na-novu-fiskalizaciju.html accessed on: 16.08.2024.
[103] PURS. (2021). *Novi model fiskalizacije.* Available at: https://www.purs.gov.rs/sr/eFiskalizacija/odgovori_najcesca_pitanja.html accessed on: 16.08.2024.
[104] Denda, S., Petrović, M. D., Vuksanović-Macura, Z., Radovanović, M. M., & Ely-Ledesma, E. (2024). What Are the Current Directions in the Local Marketplaces Fiscalization? The Online Media Content Analysis. *Societies*, *14*(4), 53.

3.5 Voluntary Compliance and Digitalisation in Sebia

Taxation within modern states is defined as the responsibility of taxpayers to fulfill their tax obligations regularly and punctually to ensure the smooth functioning of the government. In our tax legislation, instances of tax violations committed by individuals, entrepreneurs, legal entities, and responsible individuals within legal entities are considered as misdemeanors or criminal acts. According to the Law on Tax Procedure and Tax Administration, tax offenses are "violations of provisions contained in tax laws prescribed by this law, violations prescribed in tax laws, as well as violations of provisions contained exclusively in of this law", while tax crimes are "crimes established by this and other laws, which as a possible consequence have the complete or partial avoidance of tax payment, the creation or submission of a falsified document of importance for taxation, endangering the collection of taxes and tax control, illegal circulation of excise goods products and other illegal activities related to tax evasion and assistance in tax evasion".[105] The Law recognizes that tax offenses, including tax evasion, constitute socially harmful behavior by individuals or legal entities, and the breach of fiscal regulations through illegal tax evasion poses a threat to the financial interests of the state, adversely impacting its fiscal system.[106]

Over the past three years, the Tax Administration has undergone significant enhancements, chiefly involving the introduction of electronic reporting for all tax obligations, bolstering employee advisory services, promoting awareness of voluntary compliance with tax regulations, identifying secondary activities and refocusing on core business functions, consolidating the number of operational branches from 78 to 37, reinforcing the advisory role of inspectors, and enhancing data quality through register development and inter-institutional data exchange.[107] A crucial avenue for enhancing Tax Administration efficacy lies in strengthening analytical capabilities, notably

[105] Zakon o poreskom postupku i poreskoj administraciji ("Sl. glasnik RS", 138/2022). Available at: https://www.paragraf.rs/propisi/zakon_o_poreskom_postupku_i_poreskoj_administraciji.html Accessed on: 17.08.2024.
[106] Đurović, T. J., Marina, Đ., & Ristić, C. M. (2021). The determinants of tax evasion: empirical evidence from Serbia. *Экономика. Информатика*, *48*(3), 514-527.
[107] Tax Administration RS. (2021). *Tax Administration Transformation Programme 2021 – 2025.* Belgrade: Republic of Serbia Ministry of Finance.

through the Strategic Risk Department, aimed at enhancing risk detection and optimizing tax control activities by prioritizing the most high-risk taxpayer categories.[108]

Tax evasion, although a primary macroeconomic factor contributing to the rise of the informal economy, is accompanied by the more detrimental consequence of diminished budget revenues. This depletion of fiscal resources constrains the funding available for various public services, resulting in an exacerbation of the budget deficit. Furthermore, unregistered businesses pose unfair competition to legally compliant enterprises, particularly concerning financial reporting and tax obligations. To mitigate these adverse effects stemming from tax evasion and the decline in budget revenues within the informal economy, it is imperative to comprehend their underlying causes and the impact of public policy interventions aimed at mitigating them. Thus, prioritizing the quantification of the informal economy becomes essential. However, accurately measuring it presents challenges, as it involves assessing a phenomenon deliberately concealed by individuals or institutions, such as tax evasion.[109] Namely, the shadow economy and tax evasion cannot be directly observed or precisely quantified; instead, they are typically estimated using various statistical and econometric methodologies applied to data sourced from national accounts or micro surveys.[110] The magnitude of the informal economy in Serbia was gauged at 15.4% of the GDP, a notable decrease compared to the 21.2% recorded in 2012. [111] In 2017, an innovative survey approach was also employed to collect data on unreported wages and corporate earnings. Findings indicated a comparable scale of the informal economy, amounting to 14.9% of the GDP, consistent with the estimates derived from the previous survey method focusing on undisclosed income. [112] This survey took place during September and October of 2017 and involved a sample of 1049 business entities, comprising 540 companies and 509 individual entrepreneurs, primarily consisting of business proprietors or managers. The researchers emphasized that this assessment represented the lower boundary of the informal economy's extent, as the study encompassed solely

[108] Atanasijević, J., Jakovetić, D., Krejić, N., Krklec, J. N., & Marković, D. (2019). Using big data analytics to improve efficiency of tax collection in the tax administration of the Republic of Serbia. *Ekonomika preduzeća*, *67*(1-2), 115-130.
[109] Alm, J. (2012). Measuring, explaining, and controlling tax evasion: lessons from theory, experiments, and field studies. *International tax and public finance*, *19*, 54-77.
[110] Ranđelović, S. (2017). How to boost tax compliance and tax morale in Serbia?. *Ekonomika preduzeća*, *65*(1-2), 113-127.
[111] Arsić, M., Ranđelović, S., & Altiparmakov, N. (2018). Highlight 1. Shadow Economy Trends In Serbia: 2012-2017. *Quarterly Monitor*, *52*, 51-59.
[112] Atanasijević, J., Danon, M., Lužanin, Z., & Kovačević, D. (2022). Shadow Economy Estimation Using Cash Demand Approach: The Case of Serbia. *Sustainability*, *14*(20), 13179.

registered companies and entrepreneurs.[113] Ranđelović et al. (2024) note that over the past two decades, various studies that aimed to examined the extent and trends of the shadow economy in Serbia have predominantly relied on the econometric methods (especially MIMIC) or survey approaches, resulting in estimates of the shadow economy ranging widely from 11.7% to 41.4% of GDP, depending on the methodology and scope of the analysis. Authors also highlight that the assessment based on macroeconomic data indicates that the shadow economy in Serbia averaged 23.6% of GDP from 2009 to 2023, suggesting that around two-thirds of this shadow economy is related to consumption, with the remaining third linked to income. However, an important notion to underline is that, while these estimates are rough, they are considered to be close to the lower bound of the actual shadow economy's size. In 2023, the shadow economy was estimated at 23.6% of GDP. The similar results obtained from both macroeconomic and monetary methods suggest the validity of these estimates.[114]

As previously indicated, in Serbia, the primary form of tax evasion is related to VAT. The inadequacies in the tax system structure, coupled with the slower pace of the country's development, contribute to tax evasion concerning indirect taxes. Đurović Todorović and colleagues (2019) identified economic factors as the most significant influencers of tax avoidance.[115] Ranđelović, et al. (2024) suggest that the rise in the shadow economy until the mid-2010s is attributed to increased government tolerance during the 2008 global economic crisis and subsequent political changes, coupled with inefficiencies in tax enforcement. The later decline is credited to factors such as improved organization and coordination of audit authorities, digitalization efforts, reforms in penalty policies for tax non-compliance, labor market flexibilization, reduced unemployment, a shift towards larger retail chains, and an increase in cashless payments.[116]

There is an overall consensus among the tax inspectors and the taxpayers that the digitalization of the tax administration is supposed to bring numerous benefits, including higher efficiency, as well

[113] Atanasijević, J., Danon, M., Lužanin, Z., & Kovačević, D. (2022). Shadow Economy Estimation Using Cash Demand Approach: The Case of Serbia. *Sustainability*, *14*(20), 13179.
[114] Ranđelović, S., Arsić, M., & Tanasković, S. (2024). *Estimation of the Size and Dynamics of the Shadow Economy in Serbia*. Belgrade: Foundation for the Advancement of Economics.
[115] Đurović Todorović J., Đorđević M., Ristić M. (2019). *Struktura savremenih poreskih sistema*. Niš: Ekonomski fakultet.
[116] Ranđelović, S., Arsić, M., & Tanasković, S. (2024). *Estimation of the Size and Dynamics of the Shadow Economy in Serbia*. Belgrade: Foundation for the Advancement of Economics.

as easier tax compliance. Taxpayers have already expressed their satisfaction with the new services provided by the digitalization of tax administration. Namely, as many as two-thirds say that eFiscalization made their business much easier. More precisely, A survey assessing taxpayers' experiences with the tax administration reveals notable trends. Over half of the companies surveyed perceive the Tax Administration as transparent in addressing tax issues, while satisfaction with the simplicity of tax calculation procedures and filing tax returns continues to rise, with 59% of respondents rating it very good or excellent. This trend extends to VAT and income tax calculations, as well as procedures for submitting tax returns. Companies utilizing the services of "Vas poreznik" special counters express high satisfaction levels. Moreover, the proportion of companies highly satisfied with personal contact with Tax Administration officials is increasing, reaching 89% of respondents. Despite this, there remains ample opportunity to promote such services further to enhance their utilization, given their proven effectiveness in providing information and resolving taxpayers' dilemmas. Additionally, the analysis indicates that all tax administration services mentioned are considered important by the majority of surveyed companies, with three-quarters expressing satisfaction with these services, particularly highlighting the benefits of electronically filing tax returns. Satisfaction levels with electronic submission and payment of obligations, as well as the usefulness of the Tax Administration's Internet portal, have notably increased compared to the previous year.[117] At the same time, the tax officers see valuable benefits from these initiatives that can help them perform their job more accurately and effectively.[118]

3.6 Comparative Analysis of Compliance Rates Before and After Digitalization

After analysing the past and current state of the Tax Administration in Serbia, it is possible to continue with the analysis of the impact of digital transformation on the Serbian tax system. In

[117] PURS. (2021). *IPSOS - istraživanje zadovoljstva poreskih obveznika.* Available at: https://www.purs.gov.rs/sr/odnosi-s-javnoscu/novosti/6946/ipsos---istrazivanje-zadovoljstva-poreskih-obveznika.html Accessed on: 24.04.2024.
[118] Cipek, K., & Ljutic, I. B. (2021). The influence of digitalization on tax audit. *Oditor*, 37.

order to assess the trends in VAT collection efficiency before and after the digital transformation in Serbia, the C-efficiency coefficient will be calculated.

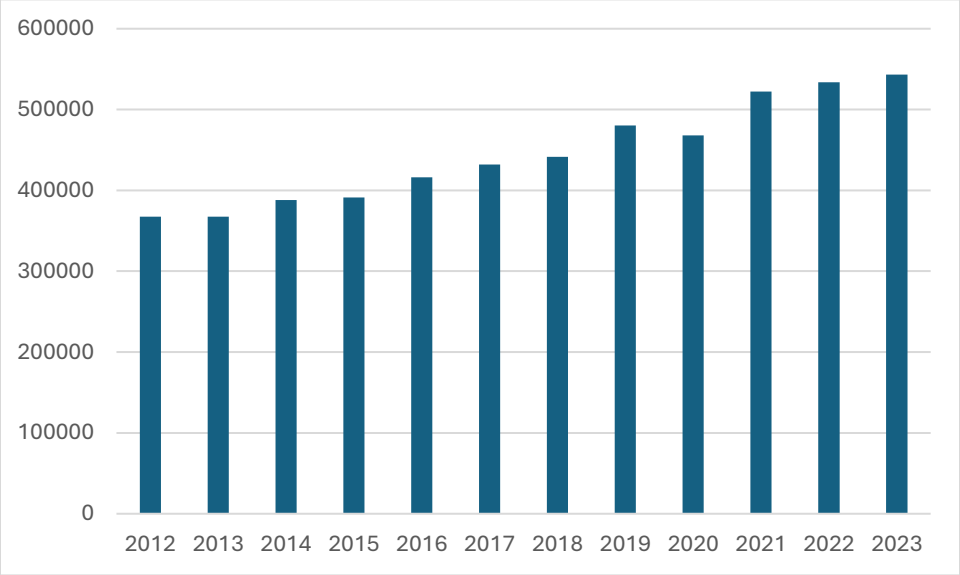

Figure 3: Serbia's VAT 2012-2023 (in mil. RSD; 2012-2023, in mil. RSD; 2012=100)

Source: Author's calculation based on data from Ministarstvo finansija Republike Srbije. (2024). *Makroekonomski i fiskalni podaci*. Available at: https://www.mfin.gov.rs/sr/dokumenti2-1/makroekonomski-i-fiskalni-podaci-1 accessed on 20.04.2024 and CekosIn. (2024). *Valorizacija.* Available at: https://www.cekos.rs/valorizacija accessed on 17.08.2024.

For the purposes of calculating this coefficient, it is noteworthy to show the trend of VAT revenue in Serbia. The period taken into account is 2012-2023. The year of 2012 is taken as the first year of the analysed period, since it marks the beginning of the new tax rates implementation (from 8 and 18 per cent to 10 and 20 per cent). As it can be seen in the figure above, the VAT revenue has been growing over the past decade. The only year when a decline was marked is 2020, the year of the COVID-19 pandemic.

Another significant thing to point out is the VAT gap, that is, the "the estimated overall difference between the expected theoretical VAT revenue and the amount actually collected."[119] Since the implementation of VAT in Serbia in 2005, an analysis of VAT gap dynamics indicates a growth

[119] European Commission. (2023). *VAT Gap.* Available at: https://taxation-customs.ec.europa.eu/taxation-1/value-added-tax-vat/vat-gap_en#:~:text=The%20VAT%20Gap%20is%20the,and%20the%20amount%20actually%20collected. Accessed on: 22.04.2024.

in the gap from 2008 to 2013, peaking at approximately one-quarter of potential VAT revenue. However, from 2014 onwards, there has been a decline in the VAT gap, signifying a reduction in the shadow economy and an enhancement in tax collection efficiency. Despite a more than a quarter reduction in the VAT gap from 2014 to 2019, it remains significantly larger than that of Central and Eastern European (CEE) and other EU countries. Preliminary estimates for 2021 show a substantial narrowing of the VAT gap to around 13.5% of potential tax revenue, aligning closely with the CEE average in 2019 but still exceeding developed European countries by half. Potential explanations for this trend include the shift to cashless payments and e-commerce during the pandemic, digitalization of tax compliance and enforcement, and changes in the economic structure such as a decrease in the share of agriculture and an increase in transactions conducted in large retail chains compared to small shops.[120]

Traditional formula for calculating C-efficiency is:[121]

$$C\ efficiency\ Ratio = \frac{\frac{VAT\ revenue}{GDP}}{SR}$$

Where:

VAT revenue - Tax revenue from VAT;

GDP - Gross Domestic product;

SR - Standard VAT rate.

As it can be seen in the figure below, the coefficient has been somewhat volatile over the analysed period, with a significant increase in 2022. This coefficient is impacted by "short-term behavioral changes, such as in consumption patterns, and the short-term fluctuation of taxpayer compliance, along with business cycles."[122]

[120] Ranđelović, S., Arsić, M., & Tanasković, S. (2022). The Impact of an Increase in Cashless Payments on the Shadow Economy and Public Finance in Serbia.
[121] Đurović-Todorović, J., Đorđević, M., & Ristić, M. (2019). C efficiency ratio as a measure of VAT efficiency in EU developing countries and Serbia. *Novi Ekonomist, 13*(2).
[122] Ueda, M. J. (2017). *The evolution of potential VAT revenues and C-efficiency in advanced economies*. Washington: International Monetary Fund.

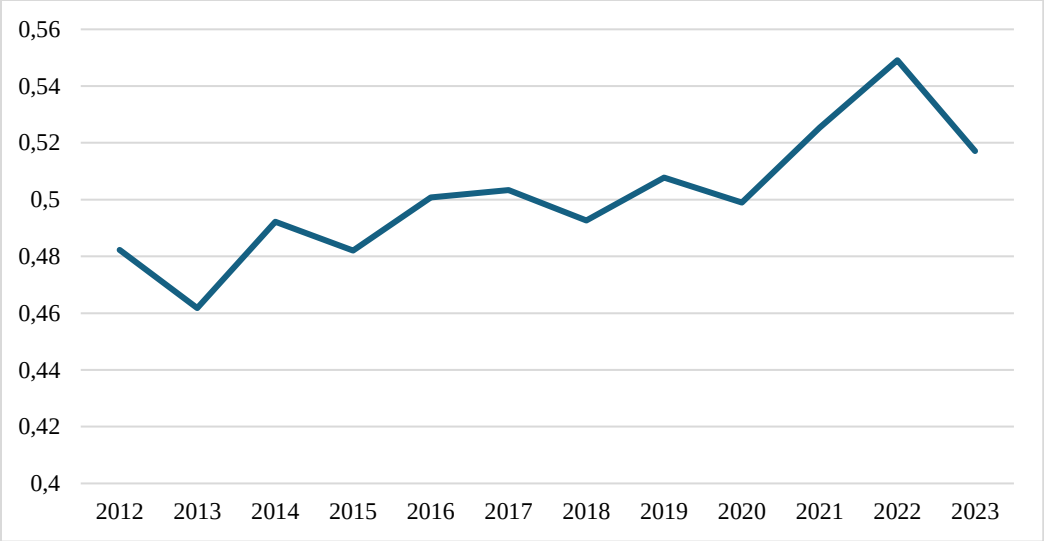

Figure 4: C-efficiency ratio in Serbia 2012-2023

Source: Author's calculation based on data from https://www.mfin.gov.rs/sr/dokumenti2-1/makroekonomski-i-fiskalni-podaci-1 accessed on 20.04.2024.

As stated previously, the main initiatives for the tax administration transformation were designed after 2019. Although there is a growth of the c-efficiency coefficient in the years when the initiatives were taken, it is difficult to derive precise conclusions. That is because the consequences of these initiatives need time to be realized.

Tax compliance costs are another important question to consider. They include all non-tax expenses related to tax compliance activities, such as preparing and submitting tax returns, paying taxes, filing and processing refund claims, and conducting tax audits. These costs contribute to the marginal benefits of tax evasion, making non-compliance and tax evasion more attractive.[123] In the table below, the time to prepare and pay taxes in hours per year is shown for the Western Balkan countries, and EU average for the period 2016-2019.

As it can be seen from the table, there is no change over the analysed period for the case of Serbia. While the country does perform better than Albania, Bosnia and Herzegovina, and Montenegro, it still lags behind the EU and some bordering countries – Croatia and North Macedonia. Based on this information it is not possible to make a conclusion that the digitalization shortened the time

[123] Ranđelović, S. (2017). How to boost tax compliance and tax morale in Serbia?. *Ekonomika preduzeća*, *65*(1-2), 113-127.

for tax compliance, but it is important to say that these innovations take time and their effects may be visible only in the years to come. Moreover, many of the important improvements were made after the 2019, which there is no data about.

Table 3: Time to prepare and pay taxes in hours per year

Country/Region	2016	2017	2018	2019
Bosnia and Herzegovina	411	411	411	411
Croatia	206	206	206	206
Montenegro	300	300	300	300
North Macedonia	119	119	119	119
Serbia	225.5	225.5	225.5	225.5
Albania	255	255	252	252
European Union	175.1	172.7	174.5	173.6

Source: World Bank. (2024) *World Development Indicators.* Available at: https://databank.worldbank.org/source/world-development%20indicators/Series/IC.TAX.DURS accessed on: 20.04.2024.

At the same time, tax enforcement is now faster. More precisely, the Tax Administration creates the Decision on forced collection (srb. *Rešenje o prinudnoj naplati*), and sends it through the post office to the taxpayer – which usually takes several days – and sends it electronically to the Central Bank's Enforcement sector. In other words, the sector for the Enforced collection receives the Decision immediately, before the taxpayer. The enforced tax collection has a priority over other obligations that the taxpayer may have. Before the digitalisation, these actions were slower, executed through the traditional post office channels, meaning that now the costs are reduced. Moreover, the taxpayers' obligations are now executed faster, and the Tax Administration now instantly controls their actions. In addition to that, the interest rate for delays in paying taxes start the day after the due date for the obligation fulfillment, meaning that the tax revenues can be collected faster. Before the introduction of the ePorezi, the Tax Administration was manually controlling the taxpayers' applications, which could take up to several months. Consequently, the tax administration has more efficient, automated processes and needs less human resources.

4 CHALLENGES OF DIGITALISATION OF TAX SYSTEM IN SERBIA

After analysing the current situation in Serbia regarding the country's tax system, it is important to understand the underlying challenges that halter digitalization and further progress. Therefore, the following paragraphs aim to provide an understanding of the technological infrastructure and overall technological readiness of Serbia's tax system, cybersecurity concerns that are unavoidable in this context, the digital divide among the taxpayers - which occurs in countries with relatively low digital literacy, as it is the case of Serbia, as well as of the administrative and policy challenges that concern both taxpayers and policymakers.

4.1 Technological Infrastructure and Readiness

Serbia is actively pursuing the acceleration of digitalization and the development of its digital economy, with initial progress already visible. However, transforming the country's economy into a digital one is challenged by a lack of awareness about ICT potentials and risks, which calls for the creation of an ICT-supportive environment. Despite the challenges in tracking the impact of innovation and digital economy trends, numerous studies and indices of digital development provide insights into the effects of digitization. In order to understand Serbia's current situation in terms of its technological infrastructure and digital readiness, it can be compared to the EU countries and to the Western Balkan countries, therefore the following paragraphs will include both of these analysis.

ICT infrastructure plays a crucial role in driving economic development, as it fosters production and export growth within the sector and enhances the overall competitiveness of the economy. Although Serbia has a relatively low ranking on the Global Competitiveness Index (60.85 points out of 100), the country exhibits notable progress in technological readiness and innovativeness.[124] Analysis of technological readiness and innovation levels within Serbia's economy underscores its

[124] Bakator, M., Đorđević, D., Ćoćkalo, D., Bešić, C., & Vorkapić, M. (2021). Forecasts for the domestic economy and national competitiveness. In *Proceedings-XI International Symposium Engineering Management and Competitiveness 2021 (EMC 2021), 18-19th June 2021, Zrenjanin, Serbia* (pp. 195-200). Zrenjanin: Technical Faculty" Mihajlo Pupin".

potential for development and competitiveness improvement. Moreover, technology transfer from developed nations serves as a basis for supporting sustainable long-term economic growth and the process of digitalization in Serbia.[125]

As stated, there are numerous indices that could help understand the country's technological infrastructure and readiness. Among them, there is the Digital Economy and Society Index (DESI), which was introduced in 2014. DESI measures the degree of digitization in EU member states. This composite index summarizes relevant indicators of Europe's digital performance and tracks the evolution of digital competitiveness among EU nations. A higher DESI score indicates better digital performance. This index comprises five main components:[126]

- connectivity,
- human capital,
- use of internet services,
- integration of digital technology, and
- digital public services.

Connectivity, accounting for 25% of the index, measures the implementation and quality of broadband infrastructure, which is essential for competitiveness. Human capital, also 25% of the index, assesses the digital skills needed to leverage digital opportunities. The use of internet services, making up 15%, evaluates citizens' engagement with online content, communication, and transactions. Integration of digital technology, 20% of the index, measures the adoption of digital technologies by businesses and e-commerce, crucial for enhancing efficiency, reducing costs, and expanding market access. Finally, digital public services, 15% of the index, focus on the digitization of public services, including e-government and e-health, to improve efficiency for both public administration and citizens.[127]

[125] Cvijanovic, D., Milojevic, I., & Pejanovic, R. (2012). Macroeconomic factors of competitiveness of Serbian Economy and ICT Sector. In *Regional Development: Concepts, Methodologies, Tools, and Applications* (pp. 714-727). IGI Global.
[126] Djukic, G. P. (2022). Digital inclusion for vulnerable groups and transformation: A comparative case study. In *Handbook of Research on Global Institutional Roles for Inclusive Development* (pp. 19-38). IGI global.
[127] European Commission. (2022). Digital Economy and Society Index (DESI) 2022. Available at: https://digital-strategy.ec.europa.eu/en/policies/desi accessed on: 20.04.2024.

The DESI index helps countries identify areas that require priority investments and actions to achieve uniform levels of digitization across the EU. This alignment is crucial for establishing a truly Digital Single Market, a top priority for the European Commission. Some authors suggest that the position of Croatia, an EU member, is particularly relevant for Serbia, as it can be used as an approximation. Croatia is ranked among the low-performing countries in the DESI index, primarily lagging in connectivity, which includes broadband internet coverage, fixed and mobile connection density relative to the population, and internet pricing adjusted for purchasing power parity. By examining Croatia's performance, Serbia can identify areas to focus on and strategies to avoid in its digital development progress.[128]

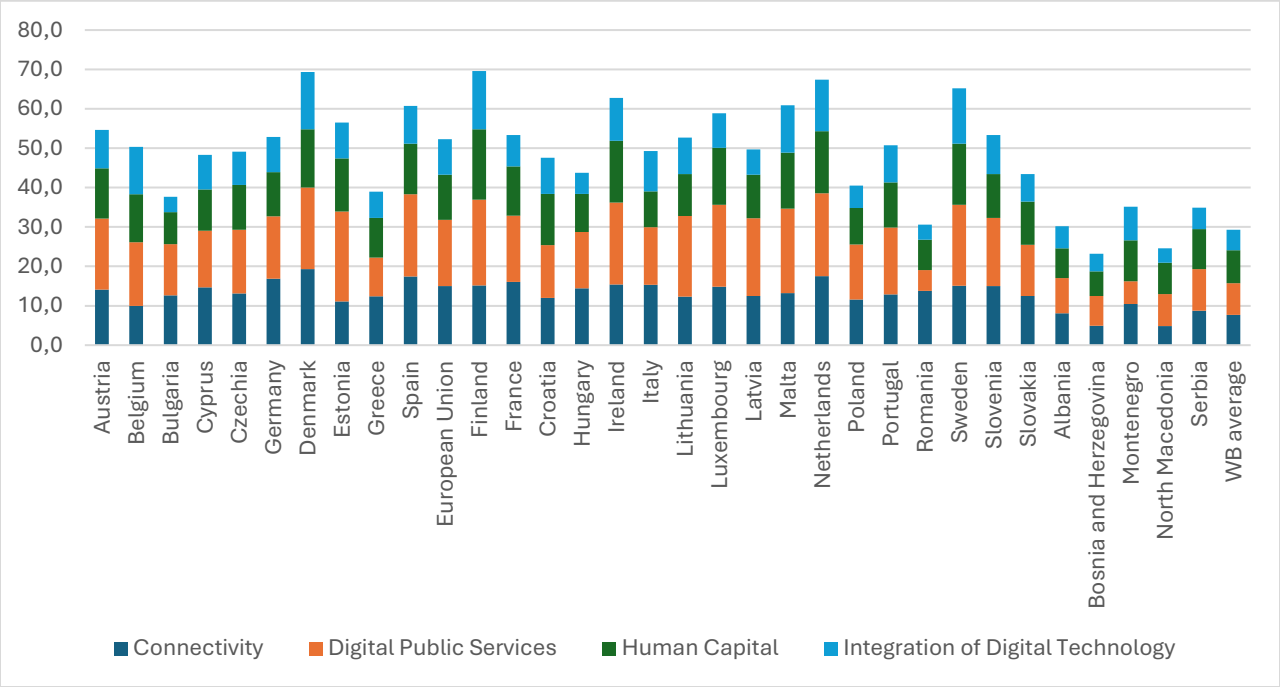

Figure 5: DESI score by country, 2022

Source: European Commission. (2023). *Digital Economy and Society Index (DESI) 2022*. Available at: https://digital-strategy.ec.europa.eu/en/library/digital-economy-and-society-index-desi-2022 Accessed on: 17.08.2024; Tintor, V., Jovanović, N., Bocarova, V., Bugarski, M. (2022). Western Balkans Digital Economy Society Index • WB DESI 2022 Report. Sarajevo: Regional Cooperation Council

Serbia is ranked 29th according to its DESI score, below all the EU countries, aside from Romania, which is the only EU country ranked below Serbia. While the EU average DESI score is around

[128] Đorić, Ž. (2020). Digital economy: Basic aspects and the case of Serbia. *Ekonomski pogledi*, *22*(2), 73-96.

52, Serbia's is around 35. At the same time, Serbia is below the Central and Eastern European DESI index, which is approximately 46.[129] However, DESI index is measured also for the Western Balkan countries, where Serbia stands out as a top digital performer, achieving a total WB DESI 2022 score above the regional average, since the WB average DESI is around 29.

In the *Human Capital* dimension, Serbia leads in the proportion of individuals with basic and above-basic digital skills and boasts the highest percentage of its population with at least basic digital content creation skills (64% compared to the WB average of 54%). Additionally, 16% of Serbian enterprises provide ICT training to their employees, slightly above the WB average, although this figure has decreased significantly since 2019. The proportion of ICT specialists in Serbia is higher than the WB average (3.3% versus 2.6%) and includes a greater share of female ICT specialists compared to both WB and EU averages. Serbia also outperforms the EU average in the number of ICT graduates, having experienced a 15% increase in this area over the past two years.[130]

Additionally, Serbia leads the WB region in the connectivity dimension, with coverage of fast broadband (NGA), Very High-Capacity Networks (VHCN), and Fiber to the Premises (FTTP) networks. The country reports a fixed VHCN coverage of 59% of households, significantly higher than the WB average of 48%. FTTP coverage has steadily increased to 50% of homes passed, aligning with the EU average and well above the WB average. Despite these advances, the overall fixed broadband uptake in Serbia is not as high, with penetration reaching 72% of all households, which is below the WB average of 77%. However, Serbia performs better in terms of households having at least 100 Mbps broadband connections, with a penetration rate of 26%, up from 19% in 2020, and above the WB average of 21%. The uptake of 1Gbps broadband remains low across the WB region, including Serbia.[131]

As of January 2023, Serbia had 6.06 million internet users (out 6.664 million inhabitants), with an internet penetration rate of 84.4 percent of the total population. Recent analysis indicates that the number of internet users in Serbia decreased by 68 thousand (a 1.1 percent decline) between 2022

[129] European Commission. (2023). *Digital Economy and Society Index (DESI) 2022*. Available at: https://digital-strategy.ec.europa.eu/en/library/digital-economy-and-society-index-desi-2022 Accessed on: 17.08.2024
[130] Tintor, V., Jovanović, N., Bocarova, V., Bugarski, M. (2022). Western Balkans Digital Economy Society Index • WB DESI 2022 Report. Sarajevo: Regional Cooperation Council.
[131] *Ibid.*

and 2023. This data suggests that approximately 1.12 million people in Serbia, or 15.6 percent of the population, were not using the internet at the beginning of 2023. It is important to note that complexities in collecting and analyzing internet user data can lead to delays in publication, meaning that the most recent figures may under-represent actual internet adoption and growth. Consequently, the actual numbers of internet users and the rate of growth could be higher than reported. According to data from Ookla, a global broadband speed test, internet users in Serbia were supposed to expect the following median connection speeds in 2024:[132]

- Mobile internet via cellular networks: 54.92 Mbps
- Fixed internet: 81.75 Mbps

Data from the same source also revealed that the median mobile internet speed in Serbia increased by 5.49 Mbps (13.4 percent) over the previous year, while fixed internet speeds saw an increase of 11.83 Mbps (24.3 percent) during the same period.[133] In mobile connectivity, Serbia boasts the highest mobile broadband take-up in the WB region at 96%, compared to the regional average of 82%. While 4G coverage reached nearly 99% of populated areas in 2021, there are currently no official plans for 5G spectrum allocation. Broadband service prices in Serbia are slightly lower compared to the WB average, according to the Broadband Price Index.[134] Serbia's Strategy for Development of New Generation Networks 2023, adopted in 2018, outlines measures to ensure the development of broadband infrastructure. The strategy promotes cloud computing, the Internet of Things (IoT), and the advancement of 5G technology. It also acknowledges the need to update the regulatory framework to support 5G development in Serbia.[135]

The Western Balkan Investment Framework (WBIF) facilitates socio-economic development and EU accession in the Western Balkans by providing finance and technical assistance for strategic investments. This initiative is a collaboration between the EU, financial institutions, bilateral donors, and the governments of the Western Balkans, funding projects in energy, environment, social development, transport, and digital infrastructure. In Serbia, the WBIF supports the Rural

[132] Ookla. (2024). *Speedtest Global Index*. Available at: https://www.speedtest.net/global-index/serbia Accessed on: 15.08.2024.
[133] Kemp, S. (2023). Digital 2023: Serbia. Available at: https://datareportal.com/reports/digital-2023-serbia Accessed on: 10.05.2024.
[134] Tintor, V., Jovanović, N., Bocarova, V., Bugarski, M. (2022). Western Balkans Digital Economy Society Index • WB DESI 2022 Report. Sarajevo: Regional Cooperation Council.
[135] USAID. (2021). Digital Ecosystem Country Assessment (DECA). United States Agency for International Development.

Broadband Rollout project, which aims to expand rural access to broadband, which helps bridge the digital divide.[136] The project focuses on deploying middle-mile fiber broadband to enhance the existing fiber backbone. Due to geographic isolation and low population density, deploying broadband in disconnected "white zones" is not currently profitable for any single operator.[137]

Since the 2017, digital transformation has become a key priority for the Serbian government. The current government approach to digitalization is gradual, marked by an increasing number of strategy documents and varying implementation capacities across ministries. The Government initiated several steps to advance her digital vision, including the creation of the Office of IT and e-Government in 2017 to coordinate digital transformation efforts across the government.[138] The Office for IT and eGovernment (OITeG) is responsible for a range of expert tasks, including the design, harmonization, development, and operation of eGovernment and information systems, as well as the infrastructure for state administration bodies and government services. It develops and implements standards for introducing ICT in these bodies, and provides support for their application. Additionally, the OITeG is involved in designing, developing, establishing, maintaining, and improving the computer networks of republic bodies, and conducts operations for the Center for Security of ICT Systems (CERT) in these bodies. It also offers services related to the design, development, and operation of Internet access and services, and other centralized electronic services. Furthermore, the OITeG plans the development and procurement of computer and communication equipment for state administration bodies and government services, alongside other tasks as specified by regulations.[139]

At the same time, Serbia has advanced infrastructure for digital signatures, introduced with the Electronic Signature Law in 2009, but adoption is not widespread. Digital signatures are linked to bank accounts, passports, and ID cards and are primarily used for business and banking purposes. The Electronic Document, Electronic Identification, and Trust Services in Electronic Business Law of 2017 superseded the Electronic Signature Law, creating a hierarchy of signatures,

[136] More on this topic in *4.3 Digital Divide Among Taxpayers*
[137] USAID. (2021). Digital Ecosystem Country Assessment (DECA). United States Agency for International Development.
[138] USAID. (2021). Digital Ecosystem Country Assessment (DECA). United States Agency for International Development.
[139] The Office For Information Technologies And eGovernment. (2024). Office for IT and eGovernment. Available at: https://www.ite.gov.rs/tekst/en/124/office-for-it-and-egovernment.php accessed on: 06.05.2024.

introducing a digital seal, and establishing an electronic document exchange. OITeG has a mandate to expand ICT use in Serbia and digitalize public-sector services, but it cannot compel ministries to digitalize. Local governments, which focus more on infrastructure, lag behind the central government in digitalization efforts. The Serbian National Interoperability Framework, adopted in 2014, aims to modernize public administration by enabling the exchange of data, information, and knowledge through harmonized business processes supported by ICT. A key component of this framework is the Government Services Bus (GSB), established by OITeG in late 2019 with support from the World Bank's Enabling Digital Governance project. The GSB connects 23 government databases and facilitates secure information exchange, but data-sharing remains a challenge, with some ministries reluctant to migrate their data to the state data center. This has resulted in ministry-specific "data islands" and a lack of interoperability in some internal systems.[140]

In 2019, a government data exchange system was launched, and Serbia's first government-wide data center was established in Belgrade. In 2020, a second state data center opened in Kragujevac, offering excess capacity for private businesses. Despite these initiatives, some citizens believe that the lack of a unified digital government strategy has impeded progress. The rate of digital adoption varies across ministries, leading to siloed systems and limited overall gains. Most digital government services are accessible through eUprava portal. However, there are still gaps in accessibility and interoperability, and not all citizen-facing portals are optimized for mobile devices.

4.2 Cybersecurity Concerns in Digital Tax Systems

Although significant improvements have been made, many Serbian citizens struggle to understand the benefits of a digital economy, and express fear, disbelief, as well as resistance to the digitization of daily life and business activities. Building a digital economy based on innovation and knowledge — which fundamentally transforms the economic structure — is crucial if Serbia aims to keep pace with developed nations, as well as contemporary economic development trends, but not without challenges. One of the main questions that concerns citizens is the privacy of their

[140] USAID. (2021). Digital Ecosystem Country Assessment (DECA). United States Agency for International Development.

data, and the government is interested in the same question. In other words, cybersecurity concerns in the digital tax system are relevant to all the stakeholders involved.

Serbia has adopted a multi-stakeholder approach to cybersecurity policy development, involving Civil Society Organizations (CSOs) and the private sector, including major telecom providers, in policy dialogues and the drafting of cybersecurity laws. The Strategy for the Development of Information Security 2017-2020 (SDIS) was created through such consultations and focuses on five priority areas:

- security of information and communication systems;
- information security of citizens;
- combating cybercrime;
- national information security; and
- international cooperation.

Serbia's National Computer Emergency Response Team (SRB-CERT), established in 2017 and accredited in 2019, is a member of the International Forum of Incident and Response Security Teams (FIRST) and operates under the Regulatory Agency for Electronic Communications and Postal Services (RATEL). Although data breaches are rare, the government has responded swiftly to incidents, such as dismantling the Ministry for Privatization after a 2014 data breach affected 5 million people. Cyber risks also impact the private sector, online media outlets, and CSOs. The cybersecurity readiness of these online media outlets and CSOs is low, making them vulnerable to impersonation campaigns and other threats.

According to a recent report using the Cybersecurity Capacity Maturity Model for Nations (CMM) methodology from the Global Cyber Security Capacity Centre (GCSCC) at the University of Oxford, Serbia performs well in many areas of cybersecurity capacity and has a solid understanding of its gaps and opportunities for improvement. This assessment, the first of its kind by the World Bank with support from Serbia's Ministry of Trade, Tourism and Telecommunications, highlights Serbia's comprehensive cybersecurity policy and legal framework. This foundation allows Serbia to create protection mechanisms, including the National CERT, ensuring the resilience of critical infrastructure. The report also noted that Serbia has

substantial capacity to develop cybersecurity expertise through professional development and academic channels, supported by a growing technology industry.[141]

The CMM assessment, which provides a benchmark for Serbia's cybersecurity capacity, identified five dimensions for improvement: [142]

- cybersecurity policy and strategy;
- cyber culture and society;
- cybersecurity education, training, and skills;
- legal and regulatory frameworks; and
- standards, organizations, and technologies.

Opinions on Serbia's cyber capacity are mixed. A 2019 World Bank Review noted that Serbia performs well in many aspects of cybersecurity capacity and has a strong understanding of its gaps and opportunities. However, Serbia lags behind its regional counterparts on the ITU's Global Cybersecurity Index (ranked 39th, while Croatia is 33rd, North Macedonia is 32nd), which measures government commitment to cybersecurity through legal, technical, and organizational frameworks.[143] The Digital Society Project (DSP) also places Serbia's cybersecurity capacity close to the global average but among the lowest in Europe.[144]

[141] The World Bank. (2020). Serbia Has Undertaken Critical Steps in Cybersecurity, Says First Cybersecurity Capacity Maturity Model Assessment. World Bank Group.
[142] *Ibid.*
[143] International Telecommunication Union. (2020). Global Cybersecurity Index. Geneva: International Telecommunication Union.
[144] USAID. (2021). Digital Ecosystem Country Assessment (DECA). United States Agency for International Development.

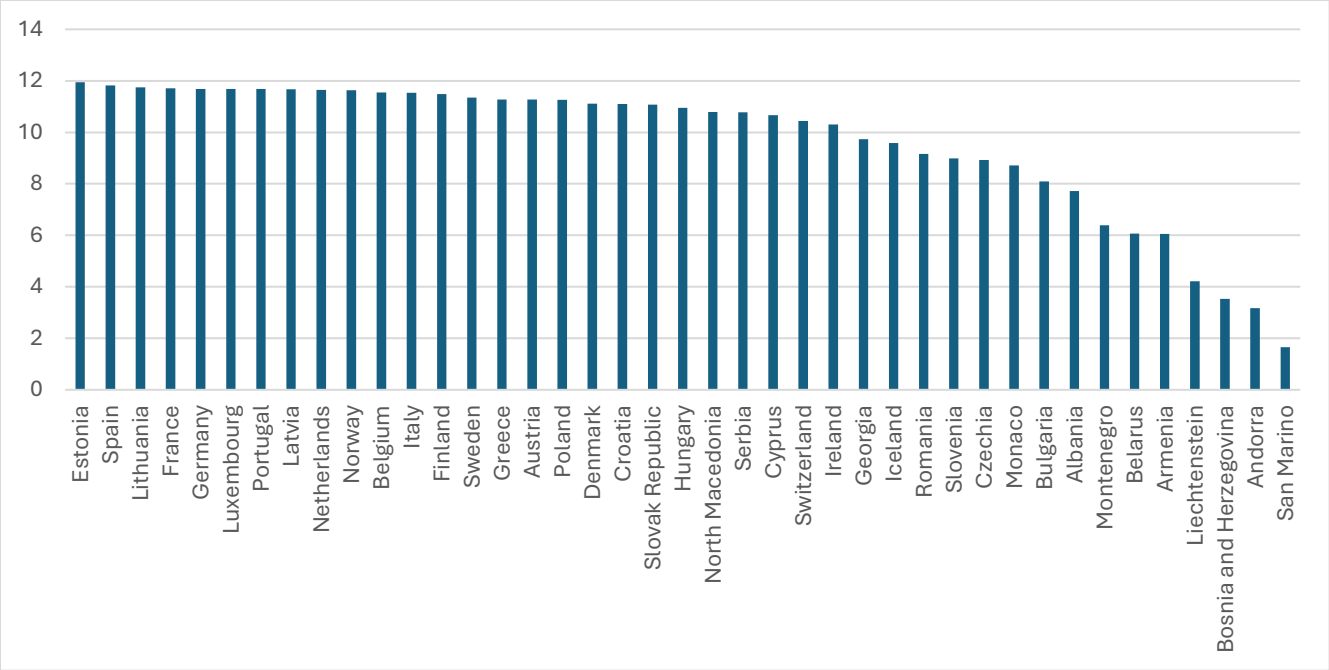

Figure 6: ITU Global Cybersecurity Index Ranking, 2022

Source: World Bank Group. (2022). ITU Global Cybersecurity Index (GCI). Available at: https://prosperitydata360.worldbank.org/en/indicator/WB+GTMI+I+43 Accessed on: 17.08.2024.

These findings provide valuable insight into the necessary steps for overcoming some of the challenges for digitalization of the tax system in Serbia. The implications are assessed in the next chapter.

4.3 Digital Divide Among Taxpayers

Another issue that presents a significant challenge in the process of digitalisation of the tax system in Serbia is related to the digital divide among the taxpayers. The digital divide is a complex phenomenon that has social, political, economic, technological, and educational dimensions. Initially, it was defined as the gap between those with access to digital ICT and those without. However, over time, this definition has evolved to include three additional interpretations: [145]

- A gap in the ability to use ICTs, measured by computer and Internet skills.
- A gap in the actual use of ICTs, measured by the number of personal computer users, online individuals, and time spent using PCs or being online.
- A gap in the impact of ICT use, measured by the economic and financial benefits ICT use can bring to individuals, organizations, or countries.

Digital divide is, therefore, created when people have different levels of access and skills to use the digital services provided by the government. In this case, unequal access and skills to use the digital tax services could lead to numerous difficulties in implementing digital solutions in the tax system, starting with low compliance. Therefore, it is understandable why it is so important for the tax authorities to lead the digitalization in a way that is coherent with educational system. In other words, the government must allow the citizens to learn how to use and benefit from these digital services, especially the marginalized groups who often do not have access to developed technologies and newest information. In the table below, digital competence areas and competences, as suggested by USAID are listed.

[145] Kovačić, Z. J., & Vukmirović, D. (2008). ICT adoption and the digital divide in Serbia: factors and policy implications. In *Proceedings of the informing science & it education conference.(Insite)*.

Table 4: EU DigComp 2.0 competence areas and competences

Competence Area	Competences
1. Information and data literacy	1.1 Browsing, searching and filtering data, information and digital content 1.2 Evaluating data, information and digital content 1.3 Managing data, information and digital content
2. Communication and collaboration	2.1 Interacting through digital technologies 2.2 Sharing through digital technologies 2.3 Engaging in citizenship through digital technologies 2.4 Collaborating through digital technologies 2.5 Netiquette 2.6 Managing digital identity
3. Digital content creation	3.1 Developing digital content 3.2 Integrating and re-elaborating digital content 3.3 Copyright and licenses 3.4 Programming
4. Safety	4.1 Protecting devices 4.2 Protecting personal data and privacy 4.3 Protecting health and well-being 4.4 Protecting the environment
5. Problem solving	5.1 Solving technical problems 5.2 Identifying needs and technological responses 5.3 Creatively using digital technologies 5.4 Identifying digital competence gaps

Source: USAID. (2021). Digital Ecosystem Country Assessment (DECA). United States Agency for International Development. p. 24

To understand the digital divide in Serbia, it is useful to take a look at the digital literacy in the country. Computer literacy refers to an individual's ability to use basic computer applications for everyday tasks such as work, school, and home activities. This includes skills in text processing, creating tables, searching for information on the Internet, and electronic communication (e.g., sending and receiving emails, and using applications like Skype, Viber, and WhatsApp). The 2022 Census results show that approximately 46% of the population aged 15 and over in Serbia are computer literate, meaning they can perform at least three basic computer activities on a computer, tablet, or mobile phone. About 30% have partial computer skills, such as finding information online, using electronic communication applications, or performing basic text writing. Meanwhile, 24% of the population are considered computer illiterate, as they are unable to perform any of the

mentioned activities. By municipality, the highest proportions of computer-literate individuals were found in the city municipalities of Belgrade, including Vračar (76.9%), Stari Grad (73.7%), Novi Beograd (70.9%), Savski Venac (69.9%), Zvezdara (67.6%), Voždovac (65.4%), Čukarica (62.6%), Rakovica (61.2%), Palilula (57.7%), and Zemun (57.4%), as well as in Novi Sad (62.8%) and Niš (55.9%). Conversely, the municipalities of Gadžin Han (18.7%) and Malo Crniće (19.4%) recorded the lowest shares of computer-literate individuals, which creates an environment in which digital divide is not only possible, but actually already present in terms of different regions in the country.[146]

Digital skills are prominently featured in Serbia's Strategy for Development of Digital Skills for the period 2020–2024. This strategy aims to enhance the digital knowledge and skills of all citizens, including vulnerable social groups, to keep pace with ICT advancements and meet labour market demands. The strategy's specific objectives include improving digital competencies within the education system, enhancing basic and advanced digital skills for all citizens, developing digital skills tailored to labour market needs, and promoting lifelong learning for ICT professionals. The strategy's implementation is structured through two action plans: the first for 2021-2022 and the second for 2023-2024. Serbia has also updated its Strategy for Development of Information Society and Information Security for 2021–2026. This strategy focuses on enhancing citizens' digital knowledge and skills, strengthening the capacity of public and private sector employees to utilize new technologies, and improving digital infrastructure in educational institutions. Additionally, the Industrial Policy Strategy 2021-2030 addresses the growing skills gap in Serbia. It envisions a transition from a low-skilled labour cost advantage to a skills-based economy, emphasizing the importance of strengthening core skills and developing digital literacy.[147]

In recent years, Serbia has made notable advancements in e-government and IT entrepreneurship, driven by initiatives from the Ministry of Trade, Tourism and Telecommunications, and the Office for IT and e-Government. The Ministry of Trade has created a comprehensive map of the national internet infrastructure, initiated the construction of rural broadband networks, and adopted a

[146] SZRS. (2023). Educational attainment, literacy and computer literacy. Available at: https://www.stat.gov.rs/en-us/vesti/20230731-skolska-sprema-pismenost/ accessed on: 24.05.2024.
[147] Tintor, V., Jovanović, N., Bocarova, V., Bugarski, M. (2022). Western Balkans Digital Economy Society Index • WB DESI 2022 Report. Sarajevo: Regional Cooperation Council.

national plan for developing digital skills. The Ministry of Education has also introduced digital literacy as a mandatory subject for all primary school students starting from the 1st grade.[148] Furthermore, the "Next Generation Broadband Connectivity for Rural Schools in White Zones" project, part of the Western Balkans Investment Framework, is being implemented with 88 million EUR in loans from the European Bank for Reconstruction and Development (EBRD) and over 34 million EUR in grants. This project aims to develop infrastructure and interconnect two operators' networks and schools in rural (white) zones, providing schools with fibre connectivity of at least 1 Gbps and neighboring households with broadband connectivity of at least 30 Mbps.[149]

The Office for IT and e-Government has focused on creating digital services to meet the needs of all users, including marginalized groups. The UNDP has supported Serbia's ambitious digitalization agenda from the outset, assisting with initiatives like Open Data, IT retraining, the establishment of the Data Center, and the enhancement of public e-services to ensure they are inclusive and responsive to the needs of citizens and businesses, and efforts were made to include persons with disabilities, vulnerable Roma communities and people with visual impairments in the national IT retraining program. Additionally, 'text to speech' functionality was introduced for all government websites to assist visually impaired individuals in accessing official information. Additionally, partnerships with the government and USAID have helped elderly people acquire the skills and equipment needed to access the digital services and benefit from new technologies.[150] Therefore, while there is a risk of digital divide among different age groups, as well as risk for people with disabilities and those coming from vulnerable Roma communities, the Government is taking proactive action to address this issue.

Another dimension of the digital divide is related to the gender disparities. Secondary research highlights a disparity in ICT skills between men and women, particularly in underdeveloped and developing countries, with similar trends observed in Serbia. From 2013 to 2022, a gap was evident in the use of computers and the internet over the preceding three months. In 2013, 60.6% of men

[148] Pickup, F. (2021). Mind the gap – how to avoid the digital divide so transformation benefits all. Available at: https://www.undp.org/serbia/blog/mind-gap-how-avoid-digital-divide-so-transformation-benefits-all accessed on 24.05.2024.
[149] Tintor, V., Jovanović, N., Bocarova, V., Bugarski, M. (2022). Western Balkans Digital Economy Society Index • WB DESI 2022 Report. Sarajevo: Regional Cooperation Council.
[150] Pickup, F. (2021). Mind the gap – how to avoid the digital divide so transformation benefits all. Available at: https://www.undp.org/serbia/blog/mind-gap-how-avoid-digital-divide-so-transformation-benefits-all accessed on 24.05.2024.

and 53.4% of women used computers. By 2017, these figures rose to over 72% for men and 63.4% for women. In 2022, nearly 80% of men and 72.7% of women used the internet. Internet usage over the last three months showed a similar pattern: in 2013, 57.0% of men and 50.0% of women used the internet; by 2017, the numbers increased to 73.7% for men and 67.4% for women. In 2022, 85.9% of men and 81.2% of women reported using the internet in the last three months. These results indicate a significant increase in the use of computers and the internet among both genders over the past decade, reflecting the digitization of business processes, education, and healthcare. However, despite the overall rise in usage rates, the gender disparity persists. These findings suggest that targeted measures are necessary to bridge this gap and promote equal ICT skills development across genders.[151]

4.4 Administrative and Policy Challenges

After analyzing the technological readiness, cybersecurity issues and the challenges related to the socio-economic questions, it is important to highlight also the problems that stem from the administrative and policy changes in terms of tax system digitalization. It has already been highlighted in the paper that an effective organizational structure within the tax administration is of high importance for ensuring smooth implementation. Therefore, the administrative challenges are often related to the tax administrators' skills, their readiness to adapt to the new environment and help citizens in fulfilling their obligations towards the state in a novel way. On a more formal side, the optimal placement of the tax administration within the government framework is another important questions. Namely, transitioning countries often aim for placing the tax administration under the Ministry of Finance to mitigate potential political influence, but the debate whether this is optimal remains open, especially in the times when tax system is changing significantly.[152] However, an always-relevant question is related to the legal framework, and some notable authors highlight that reengineering the legal framework could significantly diminish tax evasion in Serbia, since the tax policy formulation in developing countries – which is the case with Serbia – needs to

[151] Banović, J. (2024, May). ICT Skills and the Digital Gender Divide in the Republic of Serbia. In *Proceedings* (Vol. 101, No. 1, p. 15). MDPI.
[152] *Ibid.*

incorporate administrative aspects of taxation.[153] Simplifying tax legislation to make it comprehensive, understandable, and transparent is undoubtedly a way to enhance enforcement efficiency in Serbia with somewhat complex and inefficient legal systems. [154]

The fight against tax evasion heavily depends on the speed of evasion detection, meaning that the tax administration needs developed technology and skilled, highly educated, and autonomous tax administrators. In addition to that, adopting a customer (taxpayer)-centric approach helps in this combat, and the efforts that Serbia's government has been making over the past years lead to the conclusion that the country has taken the right path. However, organizational and management reforms within the tax administration are of the utmost importance, which means that there is a need for clarifying tax administration's position within the government structure. Additionally, tax administration must have a clear autonomy, and its internal organizational structures need to be optimal. The forementioned means also establishing Large Taxpayer Units, and modernizing human resource management. Recently, the Ministry of Finance formed a group which included representatives from the State Tax Administration and the Ministry of Finance, with the aim to identify high-risk industries, develop profiles for these industries, and create action plans accordingly. Nevertheless, this is not where the challenges end: collaboration among various government institutions – customs and police, to name a few – is still essential for effectively addressing the grey economy.[155] At the same time, the Ministry of Internal Affairs, responsible for local and national police services, reportedly declined to join the centralized government network, maintaining its own internet infrastructure, including fiber, antennas, and dedicated ICT staff, which presents an additional factor of complexity in an already layered system.[156]

The last point in this section is connected to the personnel factors, which also have an impact on the government's/tax administration digital transformation progress.

[153] Bird R. 2004. Administrative Dimensions of Tax Reform. Asia Pacific Tax Bulletin, March 2004, as cited in: Đurović, T. J., Marina, Đ., & Ristić, C. M. (2021). The determinants of tax evasion: empirical evidence from Serbia. *Економика. Информатика*, *48*(3), 514-527.
[154] Đurović, T. J., Marina, Đ., & Ristić, C. M. (2021). The determinants of tax evasion: empirical evidence from Serbia. *Економика. Информатика*, *48*(3), 514-527.
[155]USAID. (2021). Digital Ecosystem Country Assessment (DECA). United States Agency for International Development.
[156] *Ibid.*

The number of tax inspectors per 100,000 inhabitants in Serbia is significantly below the European average, with an unfavorable age and educational structure. Data from the latest Tax Inspectorate Report reveal a concerning trend: the number of inspectors within the Tax Administration has drastically declined. In 2023, the total number of tax inspectors decreased by over a quarter compared to the previous year, dropping from 1,236 in 2022 to just 886. This reduction highlights a worrying capacity issue, as the utilization of systematized positions fell from 60.4% to merely 47.7%, indicating that more than half of the required inspectors are missing. The 2023 report shows that the Tax Administration filled barely more than a third of the systematized positions for terrain inspectors, with their numbers nearly halving within a year. In 2023, there were only 381 terrain inspectors, compared to the expected 1,015, and a significant drop from 661 in 2022. The situation is slightly better in analytical control, where 505 out of 840 required positions were filled in 2023, though 70 employees still left this part of the Tax Administration during the year. Despite these shortages, inspectors were responsible for overseeing approximately 100,000 more taxpayers than before. The urgent need for more inspectors is further underscored by the high incidence of detected irregularities during controls, with violations found in nearly half of the inspections. In 2023, tax inspectors conducted 18,356 controls, uncovering 34.8 billion dinars in income that businesses attempted to evade, a nearly 25% increase from 2022.[157] However, the current salary policy is not attractive to experts, which presents some of the recruitment challenges. Addressing this issue through increased hiring based on merit, raising salaries, and rejuvenating the workforce would provide a necessary and systemic response to the challenges faced by the Tax Administration. Based on the outlined current situation, it is realistic to expect and state that some senior officials may be uncomfortable with technological changes. At the same time, retaining younger, digitally literate staff is challenging due to higher salaries in the private sector. This challenge has already been highlighted through the notion of the lack of tax inspectors that the country is facing.

[157] PURS. (2024). *Izveštaj o radu poreske kontrole za period 01.01-31.12.2023.* Available at: https://www.purs.gov.rs/sr/aktuelnosti/Ostalo/9836/izvestaj-o-radu-inspektora-poreske-kontrole-za-period-0101-31122023.html Accessed on: 17.08.2024.

5 IMPACT ASSESSMENT AND FINDINGS

After analysing the present challenges for the digitalisation of the tax system in Serbia, it is important to understand the impact they have and summarise the findings. Based on these conclusions and a comprehensive perspective when looking at the current state of digitalization in Serbia, the policy implications and recommendations could be formulated.

Above all, it can be said that Serbia has been making significant progress in creating digital solutions, but their effective and coordinated implementation is still somewhat of a problem. While the technological structure can be considered favourable on an average level, there are still related issues. Namely, there are still great disparities among taxpayers in different parts of the country, which is a consequence of unequal development and uneven distribution of the ICT solutions in a way that would enable citizens to use them without barriers. Although the government is investing significant efforts into making these digital services accessible to everyone, overcoming these barriers will require more time, as the educational system also needs to adapt to prepare the new generations for the digital world. However, it must be highlighted that it is usually not the new generations that lack trust and skills to access these services, but the older citizens, especially the ones in the less developed regions.

These findings lead to the conclusion that the taxpayers from these regions and those who fall in the category of old people may not understand the benefits of the digital services. Moreover, they may be less incentivised to use them and fulfill their obligations in the new way. Alongside the inability to percieve benefits, these groups are more prone to have cybersecurity-related concerns. While this is a realistic fear, the government is taking the necessary measures to enhance the security of taxpayers' information. In general, digital divide is one of the underlying problems in all the aspects that were analysed in the section 4, hence why governments efforts to make the system as simple (for the taxpayers), accessible, and secure as possible can tackle all the listed issues. While all the challenges disturb the progress, the overall efforts to make the tax system digital and accessible should result in positive outcomes – higher satisfaction levels of the taxpayers, higher compliance rates, higher tax revenue, lower tax evasion.

The country is rapidly improving in all the areas of digitalization of the tax system, and it is realistic to expect that with the advancement of artificial intelligence, blockchain and other technologies, Serbia's tax administration will be improved even more. However, these actions require additional external support. Looking ahead, with the support of the World Bank, as well as IMF, a new tax administration system will be introduced to enhance analytics by improving data accessibility and integration, enabling the use of more advanced modeling techniques.

6 POLICY IMPLICATIONS AND RECOMMENDATIONS

Ultimately, it is possible to summarize the policy implications and recommendations of the current state of digitalisation of the tax system. The following paragraphs are dedicated to the policy recommendations for effective digitalisation, strategies that could help overcome the previously described challenges and ways to improve taxpayers' education and awareness.

6.1 Policy Recommendations for Effective Digitalisation

On a general level, when analysing the possible solutions for digitalization, it is reasonable to start from the ways in which Serbia can improve its ability to use ICT solutions, develop and innovate more. To address the need for a new source of growth, Serbia faces an imperative of making ICT a key priority, as current policy attention is lacking. The overall productivity of the national economy, its competitiveness, and economic growth are hindered by businesses' difficulties in adapting to ICT-based operations. To respond to this, authors in the field of economy suggest that the solution is to focus on the ICT transformation of companies. Innovation in Serbia is hindered by decreasing R&D activities, a decreasing number of researchers, and a brain-drain. To foster innovation, the country needs to increase investment in education, R&D, particularly in the ICT sector. The inefficiency and high cost of the state are also significant barriers, with low productivity in the public sector. Supporting the development of e-government can help address this issue. Therefore, the first policy recommendation includes higher investments in education and research, as well as the measures to improve the public administration efficiency – through trainings and different human resource management.

According to UNDP, to create a society that is inclusive by default rather than just digital by default, digital inclusion must be integral to any new public initiative from the outset. This approach involves several key improvements. First, expanding digital infrastructure and opportunities in small towns and rural areas is essential to address rural depopulation and emigration. Additionally, fostering collaboration between different ministries can ensure a holistic approach to bridging the digital divide. Subsidizing essential ICT equipment and making telecommunication services with larger data and bandwidth allowances more accessible is crucial,

especially for those in need, regardless of location. Digital solutions should be designed with women in mind, as they are the largest users of e-services in Serbia. Moreover, supporting the private sector's digital transition is vital. Although nearly 50% of Serbian companies moved online during the initial wave of COVID-19, only 14% currently recognize digitalization as key to their development. Continuously upgrading the skills of public sector workers is also important to ensure that government services are user-centric. Furthermore, adapting legislation to secure decent working conditions for gig economy workers is necessary, as recent UNDP-supported research indicates that digital platforms do not provide health or social coverage for their employees. As the former UN Secretary-General noted, a society is judged by its treatment of its weakest, most vulnerable members. Beyond solidarity, there are strong economic and security reasons to support those affected by technological advancements. Inequality can lead to migration, depopulation, and conflict, which hampers development. Therefore, it is crucial to support government, corporate, and civil sector initiatives that promote inclusivity and help Serbia avoid the digital divide.[158]

The growing importance of big data facilitates easy cross-checking of information, which enhances taxpayer compliance. The digitization of tax return filing, tax calculations, e-fiscalization, and e-invoices generates extensive databases, which provides an opportunity to apply advanced big data analytics and statistical methods for risk assessment and monitoring tax compliance. This enables tax authorities to focus their controls on high-risk areas. Moreover, tax authorities are increasingly sophisticated in their use of data matching and analytics. By integrating various data sources, including a company's country-by-country reports, they can create a comprehensive corporate tax profile. These analytics are applied across the supply chain to identify errors (intentional or otherwise), data inconsistencies, systemic fraud, and compliance risks. Additionally, reforms should shift the focus from managing processes to managing data, with an emphasis on collecting accurate data. For instance, in one high-income jurisdiction, it was found that 15% of taxpayer files contained errors, yet 98% of tax returns could be prefilled using data from banks alone.

[158] Pickup, F. (2021). Mind the gap – how to avoid the digital divide so transformation benefits all. Available at: https://www.undp.org/serbia/blog/mind-gap-how-avoid-digital-divide-so-transformation-benefits-all accessed on 24.05.2024.

Finally, tax administrations must develop scalable and interoperable systems that can be used across departments, both at headquarters and in the field.[159]

6.2 Strategies to Overcome Implementation Challenges

It is known that tax system complexity strongly influences tax compliance, which means that in case of Serbia, there is a need for a better tax system design and structure, especially now that taxpayers face significant changes. Namely, the focus should be on the taxpayers' satisfaction so to increase the rates of voluntary tax compliance. The adoption of a client-centric approach towards taxpayers is another key way of improving the adoption and overall usage of the digital solutions in the field of tax.[160]

Since cybersecurity is among the main concerns, it is important to mention that the newly implemented Cybercrime Strategy in Serbia, which aims to establish anti-cybercrime units within agencies and the military, addresses the growing importance of cybersecurity for the government. Ministry of Trade, Tourism, and Telecommunications, emphasized the importance of a systemic approach to cybersecurity, covering incident response, protection of vital ICT systems, and the establishment of competent authorities. This approach is considered essential for effective digitalization. Further efforts will focus on improving institutional and business cybersecurity and raising citizen awareness about data protection and information security. The strong industry demand for cybersecurity skills poses a challenge for government retention of cybersecurity professionals, a key area identified for improvement. Enhancing public awareness about online privacy risks and further adoption of cybersecurity standards and good practices in enterprises are also critical.[161] Also, Serbia has a relevant legal framework for cybersecurity and a functioning national computer emergency response team (nCERT). However, there is a need to strengthen and upgrade these capacities further. Efforts are ongoing to align Serbia's legislation with the EU's

[159] EY Global. (2019). *Why more digital tax administration may mean more risks for boards.* Available at: https://www.ey.com/en_rs/tax/why-more-digital-tax-administration-may-mean-more-risks-for-boards Accessed on 16.08.2024.
[160] Banović, J. (2024, May). ICT Skills and the Digital Gender Divide in the Republic of Serbia. In *Proceedings* (Vol. 101, No. 1, p. 15). MDPI.
[161] The World Bank. (2020). Serbia Has Undertaken Critical Steps in Cybersecurity, Says First Cybersecurity Capacity Maturity Model Assessment. World Bank Group.

cybersecurity regulations. Moreover, there is often a gap between policy and implementation. For example, OITeG has a cybersecurity department that is reportedly understaffed due to a lack of qualified technical personnel. Consequently, the policies should address the issues of lack of personnel and adequate capacities, and guide efforts towards these lacking areas.

6.3 Improving Taxpayer Education and Awareness

The development of user-friendly web portals and innovative educational initiatives targeting taxpayers through mediums such as television shows and social media are essential for enhancing taxpayer awareness and willingness to fulfill their obligations. Establishing both an effective organizational structure and management framework within the tax administration is an essential prerequisite for strong tax collection institutions.[162]

Lastly, in Serbia, reducing tax rates and broadening the tax base are crucial steps in combating tax evasion, given its reliance on indirect taxes. Lower or uniform tax rates, especially for consumption taxes, coupled with an expanded tax base, can mitigate revenue losses. Tax rate decisions should consider Serbia's administrative capacity to effectively influence real income reporting. Taxpayer satisfaction is pivotal in ensuring voluntary tax compliance. Informing taxpayers about government revenue allocation fosters a belief in equitable taxation, thereby enhancing trust in the Serbian tax system and increasing taxpayer compliance.

[162] Nerre, B. I. R. G. E. R., Dragojlović, A., Ranđelović, S., & Đenić, M. (2014, June). Tax reform in Serbia: Experiences and perspectives. In *proceedings of the Tax Reforms: Experiences and Perspectives Conference, Institute of Public Finance, Zagreb* (pp. 79-96).

7 CONCLUSION

The digital transformation of the tax system in Serbia is one of the questions that have received significant attention over the past years. This paper aimed to understand the current state of the digitalisation of the tax system, various effects it has, as well as the challenges it faces.

It can not be confirmed that the digital transformation in administering taxes (e-filing and e-payments of taxes) is associated with a significant decrease in the tax administration costs for the government for the case of Serbia, as the data still does not provide any evidence of such effects. However, it is necessary to continue monitoring the effects, as they will probably be evident in the years to come. While there is evidence in the literature that digital platforms which decrease tax compliance costs can foster taxpayers' voluntary compliance. However, there is not enough evidence for the case of Serbia to conclude that. It can be confirmed that the introduction of digital monitoring and real-time reporting mechanisms may be linked to a decrease in shadow economy and tax evasion, but yet in the long run, if digital transformation is followed by other institutional reforms, as the relevant literature suggests the same, and the efforts of the Serbian government aim to provide the same. Also, it can be confirmed that the use of digital tools in the tax system may lead to a digital divide among taxpayers, as there is evidence that suggests that the use of digital tools in the tax system does create digital divide among taxpayers, leaving behind elderly people, women, people with disabilities, people with low income, the ones with low level of digital literacy and people from marginalized communities, such as Roma people.

The data shows no improvement in the tax compliance costs in terms of time to prepare and pay taxes in hours per year. Based on the data from The World Bank, it is not possible to make a conclusion that the digitalization shortened the time for tax compliance, but it is important to say that these innovations take time and their effects may be visible only in the years to come. However, in the case of tax enforcement costs, it is important to highlight that the processes the Tax Administration executes have significantly improved. Namely, with the digitalization of the tax system, the tax obligations are controlled automatically, which decreased the number of needed people on these activities, and reduced the costs of performing these controls. Moreover, the digitalization shortened the time needed to inform the Central Bank’s Enforcement collection sector about the Decision on forced collection, allowing it to collect the revenue faster.

Nonetheless, it is important to highlight that there are two platforms of the tax system in Serbia: local (Local Tax Administration platform – LPA) and national (ePorezi platform), which are separated. Additionally, there is another digital platform for the Business Registers Agency (APR) and the three platforms are not fully connected, meaning that the data is not completely integrated, which can be considered a barrier to access of the accurate data within the tax system.

To understand whether the digitalization can narrow the scope for underreporting and encourage tax compliance, c-coefficient was calculated for the period 2012-2022. It has been somewhat volatile over the analysed period, with a significant increase in 2022. However, this coefficient is impacted by short-term behavioral changes and fluctuation of taxpayer compliance, along with business cycles, which makes it difficult to derive precise conclusions, since the main initiatives for the tax administration transformation were designed after 2019.

The digital transformation of the tax system in Serbia, if not followed by adequate educative measures and infrastructure investments can have negative impact on some groups of taxpayers. Mainly elderly people, women, people with disabilities, people with low income, the ones with low level of digital literacy and people from marginalized communities, such as Roma people can experience exclusion due to lack of access and/or needed skills needed to access the digital services. However, with the government's initiatives these negative effects are to be minimized.

The paper analysed the various aspects of digitalization of the tax administration in Serbia. Although it has shed the light to some of the pressing challenges and highlighted the positive changes that were made, there were numerous limitations to this study, main one being the lack of official, reliable data, especially from the last two years. Therefore, many of the questions remain unanswered, but more time will be needed to comprehensively answer them. Consequently, the future studies should include more extensive data series and be based on different methodologies, such as interviews with the tax administrators to understand how their jobs have been impacted by these innovations.

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