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Assessing taxpayers' satisfaction with tax administration e-services*

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Abstract

As tax administrations worldwide modernize through digital technologies, it has become increasingly important to understand taxpayers' satisfaction with these services. This research aims to estimate the relationships between satisfaction with tax administration e-services and factors such as trust, service quality, age, and gender, addressing a noted gap in the existing literature. Using the questionnaire distributed among taxpayers in Slovenia, four hypotheses were tested. Next to descriptive methods, Pearson correlation analysis, T-tests, and Mann-Whitney U-tests were used. The findings reveal a positive correlation between e-service quality and trust, as well as sustainability, but lower satisfaction with tax administration e-services among the younger generation. Gender differences do not exist, as male and female taxpayers are perceived to be equally satisfied with the e-service. The results suggest that improving tax information's usability, clarity, and security increases taxpayers' confidence and satisfaction. Quality information does not cause confusion and distrust. From the taxpayers' perspective, it is essential to ensure accessible, easy-to-understand information and implement quick feedback mechanisms to enhance clarity and strengthen taxpayers' trust.

Keywords: tax administration, e-service quality, trust, age, gender

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1. Introduction

Satisfaction with tax administration (TA) e-services has become important for building an efficient and reliable tax system. From the taxpayers' perspective, it is crucial that meeting tax obligations in a tax system is easy and seamless to increase tax compliance and develop a positive attitude towards the TA. Taxpayers want up-to-date, understandable, and useful information and expect system and service quality from the TA. In this ongoing process, TAs are looking for new models to reduce burdens for taxpayers to build compliance (OECD, 2023a). In line with this, they apply behavioral insights to improve services and design new practical policies focused on taxpayer behaviour (OECD, 2021). Taxpayers are not a homogeneous group and perceive tax complexity as a multidimensional concept (Paleka and Vitezić, 2023). They are motivated to meet their tax obligations through various mechanisms, which allows them to be categorized as either extrinsically or financially motivated or morally or socially committed (Paleka and Vitezić, 2023). Taxpayer behavior is shaped by numerous economic, non-economic, and socio-demographic factors, which consequently influence perceptions of TA services (Paleka et al., 2023; Güzel et al., 2019; OECD, 2022a; Hauptman et al., 2023; Darmayasa and Hardika, 2024; Matthaei et al., 2023).

In administration, investment focus, especially with the use of advanced technology today (OECD, 2023b), is strengthening trust (OECD, 2023a), easy-to-use and effective services tailored to the specific individual circumstances of taxpayers. New e-services, acting as a one-stop shop for e-government services and providing a central access point for taxpayers, are continuously being upgraded as part of the e-government national portals (OECD, 2024). As TAs strive to improve their e-services primarily through online self-service and artificial intelligence, new e-filing and e-payment options for taxpayers have been developed (OECD, 2020). Satisfaction with the quality of e-services influences taxpayers' compliance, as confirmed by previous research (Saptono et al., 2023; Abed and Robinson-Foster, 2024; OECD, 2023 a,b,c; Basey et al., 2022; Bongomin et al., 2019; Horan and Abhichandani, 2006; Connolly et al., 2017; Geringer, 2021; Opiso et al., 2023; GOV.si, 2022). Therefore, it is in the best interest of TA to ensure high satisfaction levels. Previous research has demonstrated that factors such as age, income level, education, and employment status play a significant role in shaping taxpayer perceptions of TA and their willingness to comply with tax obligations (Paleka et al., 2023).

Digitalization drives economic growth. Therefore, it is also a priority in the Western Balkan region (OECD, 2024). The Slovenian TA digitally modernized its operations (initially introduced in 2003) with the development of the eDavki portal (*e.g.*, *eTaxes portal*), which ensures secure operations by using the latest technology, legal provisions, and the user's responsibility (FURS, 2024). The TA periodically collects data on taxpayer satisfaction with the portal's usability (GOV.si, 2022) but

lacks sufficient analytics to support higher taxpayer satisfaction, leading to more sustainable tax behavior.

Our research aims to address this gap arising from insufficient TA analytics by examining additional factors. Therefore, this research investigates taxpayer satisfaction with TA e-services based on factors such as the TA's information, service quality, trust, and demographic characteristics like age and gender. Although the relationships of the variables such as information and trust can be bidirectional as they may serve as precursors to taxpayer satisfaction, as indicated by previous studies (Artawan et al., 2020; Tambuna and Haryatib, 2022; Paleka, 2023), our research will focus on examining the relationship between taxpayers' satisfaction and the information they receive from the TA.

In addition to accessibility, assistance, simplification, and updating of business operations with customers by the TA, the accessibility and responsiveness of TA employees, lawful and impartial treatment, quick and easy form submission, and flexibility in handling matters (service quality) are essential. Furthermore, factors such as easy registration, easy access to documents, properly documented content, quick submission of tax returns, timely updates on tax legislation and rules, advantages in fulfilling tax obligations, and professional knowledge and experience for submission (system quality) are crucial.

Despite their significance, gender and age in the context of tax sustainability awareness are often overlooked and poorly researched. The OECD (2022b) promotes gender equality as one of the key policy steps for countries to design their tax systems. According to the OECD (2022b), TA and tax compliance have different outcomes for males and females, as actions of the TA can be directed at specific genders. Namely, gender socialization theory advocates for values and social roles for females and males (Helmy et al., 2020), leading to different tax compliance practices and levels (Tjondoro et al., 2019). Value judgments and social and economic behavior impact implicit gender bias especially (Stotsky, 1996). Additionally, taxpayer satisfaction, depending on gender, shows that females are more likely to indicate measures that help them be more tax compliant (Kangave et al., 2021; Twesige, 2024; Paleka et al., 2023) and consequently more sustainably aware. Therefore, TA practices/services may be used more by one gender than by another, and according to the OECD (2022b), the approaches used by taxpayers can have gender-dependent impacts on tax compliance programs. However, the Global Gender Gap Index of the World Economic Forum (2024) and the Gender Equality Index of the European Institute for Gender Equality (2023) rank Slovenia highly among countries in terms of gender equality (GOV.si, 2024), which leads us to assume that taxpayers, on average, are equally satisfied with the e-services of the TA. The TA, regardless of gender, provides them with the same rights and opportunities by the law. We identified a research gap concerning measuring gender differences in taxpayers' satisfaction with TA e-services.

Empirical research also shows mixed results regarding the correlation between age and taxpayer satisfaction (Al-Hammouri and Abu-Shanab, 2017). Some authors argue that the younger population is more satisfied with the TA e-services (Islam et al. 2015), while others claim the opposite (Horan and Abhichandani, 2006). There is a gap in exploring this relationship even in previous research in Slovenia (GOV.si, 2022). Although the TA is required by regulation to assess customer satisfaction with the authority's services to take necessary measures, the questionnaire or its analysis does not cover all the essential aspects. This study aims to address these gaps.

By exploring the relationship between taxpayers' satisfaction with information taxpayers receive from the TA, H1 was set: Taxpayers' satisfaction with the TAs' information is positively linearly related to their trust in the TA. Furthermore, the paper aims to determine whether more satisfied taxpayers are more aware of sustainability issues. Compared to previous research (GOV.si, 2022), our research highlights H2: Taxpayers' satisfaction with the quality of TA e-services is positively and linearly related to the sustainable responsibility of taxpayers. Additionally, the study examines demographic characteristics (age and gender), leading to the third hypothesis (H3): older taxpayers are generally more satisfied with the TA's e-services than younger taxpayers. The fourth hypothesis (H4) suggests that male and female taxpayers who benefit from the TA's services are equally satisfied with those e-services.

The rest of the paper is organized as follows: Section two reviews the literature on measuring satisfaction with TA e-services and relevant factors. Section three addresses the methodology, while Section four outlines the empirical data and analyses. Section five presents and discusses the results. Section six presents conclusions, arguments, and potential implementation of the findings.

2. Literature review

This section offers a theoretical perspective to establish hypotheses at the end of each subsection by elaborating on the variables used in the empirical research that measures taxpayers' attitudes and opinions regarding various aspects of the tax authority's e-services. The first subsection addresses taxpayers' satisfaction with information and their trust in data security and privacy. The second subsection explores previous research on satisfaction, service quality, and sustainability. Finally, the third subsection provides an overview of recent studies examining the relationship between satisfaction and demographic variables such as age and gender.

2.1. Tax administrations' information satisfaction and trust in data security and privacy

A trustworthy, fair, effective, and efficient TA is a top priority for every country (Milosavljević et al., 2023; Bassegy et al. 2022). Taxpayers who are satisfied with the

quality of public services and perceive the tax system as fair demonstrate a greater willingness to voluntarily comply with tax laws and regulations. (Paleka and Vitezić, 2023). Trust in authorities may be a fundamental prerequisite for the phenomenon in which procedural fairness positively influences voluntary tax compliance (van Dijke and Verboon, 2010). Trust- and power-based strategies were found to be crucial for positively influencing taxpayer compliance (Batrancea et al., 2019).

Higher levels of tax compliance and accuracy are more likely to be achieved when taxpayers perceive digital solutions for tax reporting as easy to use (Venkatesh et al., 2003). Authors used various instruments to measure satisfaction, from e-government satisfaction (EGOVSA) and Advanced Travel Information Systems (ATIS) to End-User Computing Satisfaction (EUCS) (Saptono et al., 2023), as each instrument provides a different perspective. The DeLone and McLean (2014) model measures the quality of an information system through two dimensions: information quality and system quality. Information, system, and service quality are measures used in response to the information system output (DeLone and McLean, 2014). In contrast, Davis's TAM model measures only a subset of information system success and does not consider organizational impact, service quality, or the nature of use (Saptono et al., 2023).

The perceived service quality of e-tax services positively impacts taxpayers' willingness to comply with tax regulations (Saptono et al., 2023) and depends on trust in tax authorities (Güzel et al., 2019). According to the OECD (2022a) building trust in a tax system requires action and commitments from TA as well as taxpayers, as an ongoing effort (Darmayasa and Hardika, 2024) and is a key domain integrated in the tax compliance framework (Matthaei et al. 2023). Many empirical studies on investing trust in TA support the importance of trust in tax compliance (Nur et al., 2023; Van Lange et al., 2017). Most of the previous research has been focused on different variables impacting trust, such as justice, profession (Güzel et al. 2019), power (Kogler et al. 2022), tax morale (Ciziceno and Pizzuto, 2022), fairness, transparency, neutrality, simplicity (HMRC 2021, 5), and service-oriented behaviors (Kogler et al., 2022). Studies indicate that trust in the independent accounting profession is related to tax compliance (Güzel et al., 2019).

Trust in tax government can be effectively supported through the implementation of digital -based services (Sutrisno and Dularif, 2020; Hamilton-Hart and Schulze, 2016). In this case, it is essential that taxpayers have confidence in the security and privacy of their data. To promote the adoption of these technologies, the security and usability of electronic filing systems must be improved (Tahar et al., 2020). Due to tax secrecy and specific international and national tax laws or GDPR policy, TAs must provide high security by not sharing personal data with others and by protecting the personal data of taxpayers. While some risks emerge from big data technology, particularly regarding tax privacy rights and profiling practices (Politou et al., 2019), is TA obliged to ensure privacy and data protection. Trust in the use of

data and in the security of national tax systems (OECD, 2020) must be considered which is the reason, why trust in electronic services has been widely studied in the context of e-government (Gradison, 2007; Ashiq and Hussain, 2024), e-tax filling systems (Ramdhony et al., 2022).

This research highlights how trust, alongside performance and effort expectations, as well as taxpayers' innovativeness, is a significant driver in e-tax adoption. Usage of taxpayers' intention of e-tax filling system depends on perceived usefulness, service quality and users' satisfaction (Ramdhony et al., 2022). Despite all the research, there has been little research directed to study TA information and trust variable as measurement of taxpayers' satisfaction.

Based on the argumentation above, our research tested H1: Taxpayers' satisfaction with the TAs' information is positively linearly related to their trust in the TA.

2.2. Satisfaction, service quality and sustainability

Sustainability requires a shift in taxpayer behavior (Hlastec et al., 2023; Konstantinos et al., 2022). Tax sustainable behavior supports tax compliance with laws and regulations, as well as the fairness, efficiency, and stability of the tax system to ensure the financing of other sustainability goals set by the government. At the forefront of sustainability and sustainable behavior are ethical principles in generating economic profit, which is not the absolute goal, concern for societal development and humanitarian efforts, education in tax literacy, and accepting financial responsibility for environmental issues. There is empirical evidence confirming how tax services positively affect tax compliance (Riska et al., 2024). If tax services are poor, they can contribute to tax non-compliance (Adekoya et al., 2020). Therefore, TA services are important in determining taxpayer compliance (Rokhman and Salman, 2024). In this paper, we argued that taxpayers more satisfied with the TA's e-services are more sustainably aware.

Our research tested H2: The satisfaction of taxpayers with the quality of TA e-services is positively and linearly related to the sustainable responsibility of taxpayers.

2.3. Satisfaction, age, and gender

Demographic characteristics, including age, gender, education, income level, experience, and familiarity with computer and internet technology (Fu et al., 2004), significantly influence taxpayer satisfaction with e-tax systems (Al-Hammouri and Abu-Shanab, 2017). However, this influence is not always consistent. While Islam et al. (2015) suggest that younger individuals tend to be more satisfied than older ones, findings from OECD (2023c) and Horan and Abhichandani (2006) indicate

that older users are more satisfied than their younger counterparts. Older people are more compliant, generally more risk-aware (Walsch, 2012), have more experience, and are more trusting towards institutions. Satisfaction increases with age (Herzog and Willard, 1981). This makes age an interesting factor (Al-Hammouri and Abu-Shanab, 2017) that needs to be further examined. Previous research in Slovenia (GOV.si, 2022) has not examined the factor of age in the context of its significant impact on taxpayer satisfaction with e-services. To eliminate an existing gap in research, we tested whether:

H3: Older taxpayers are, on average, more satisfied with the e-services of the TA than younger taxpayers.

Gender differences relate to legal arrangements, the historical division of labor, power differences, institutional payment arrangements, and economic incentive patterns over time, across cultures, but also from honesty, risk taking and obedience (Twesige et al. 2024). The research by Ilias et al. (2009) and Connolly et al. (2017) did not find a significant influence of gender on satisfaction with the services of the TA (Al-Hammouri and Abu-Shanab, 2017). However, the literature offers some evidence of behavioral differences between genders (Twesige et al. 2024). To test the impact of gender on e-services satisfaction in Slovenia, we assumed, following the Global Gender Gap Index (World Economic Forum, 2024) and the Gender Equality Index (European Institute for Gender Equality, 2023), that male and female taxpayers are, on average, equally satisfied with the services of the TA. Therefore, the last research hypothesis was:

H4: Male and female taxpayers-beneficiaries are, on average, equally satisfied with the e-services of the TA.

3. Methodology

In the framework of our research on taxpayer satisfaction with the services provided by the tax authority, we focused on corporate taxpayers who utilize the services of the tax authority. The questionnaire was emailed to 167 taxpayers, of whom 120 responded (71.86%). Data collection occurred from January 30th, 2024, to March 15th, 2024. Given the sensitive nature of topics concerning TA assessment, the snowball sampling approach, a non-probability sampling technique, was utilized to identify and recruit respondents in order to gather information from a specific, narrow niche (Dragan and Isaic-Maniu, 2022). In our case, we distributed the questionnaire (through an accounting service) to the target group, which then forwarded it to other taxpayers and users of tax services. We ensured respondents a high data security and confidentiality level, allowing the survey to proceed according to ethical research principles.

In the study, we examined taxpayer satisfaction with the services of the tax authority. We utilized five factors, and thus, the questionnaire was divided into five sections: Information (Section A), System Quality (Section B), Service Quality (Section C), Trust (Section D), and Sustainable Responsibility (Section E). The custom questionnaire was designed based on other studies. The research by Horan and Abhichandan (2010) served as the basis for the statements A1, B2, B3, and B7. The items A4, B1, B4, B5, B6, C1, C2, C3, C8, D1, D3, D4, D5, and D6 were derived from the study by Connolly et al. (2017). The statements A2, A3, C4, C5, C6, C7, C9, and D2 were adopted from the Slovenian Tax Authority survey (GOV.si, 2022). Adjustments were made to reflect the functioning of the Slovenian tax system, and thus, specific questions from foreign studies were partially modified. A part of the questionnaire, which included sustainability statements, was formulated by Vetrih (2024) in Section E.

The first section (A) focused on the information provided by the tax authority to taxpayers via the eDavki online portal. This section includes a list and calendar of form submissions, which reminds taxpayers of when they need to submit a particular form or fulfill their obligations, as well as various updates on the portal, possible system upgrades, errors, issues, and any changes in form submissions, document structure, or submission instructions. It also covers various legislative changes that alter the interaction with the tax authority (FURS, 2024). This section comprised four statements. The second section (B) focused on system quality and included seven statements. These aimed to assess whether taxpayers are satisfied with the usability of the eDavki portal and its offerings, whether all services provided by the tax authority are well organized, and whether taxpayers are satisfied with the system's organization. It also examined whether the submission of forms is quick and straightforward. The third section (C) concerns service quality. It comprised nine statements related to all the services offered by the tax authority, the execution of these services, the responsiveness of the tax authority's employees, and how they assist taxpayers in case of problems or questions. The fourth section (D) focused on taxpayer trust in the tax authority. It included six statements assessing whether taxpayers trust the tax authority with their data, how satisfied they are with the system's performance, and how data protection influences their use of the eDavki portal. The fifth section (E) measured sustainable responsibility, with statements reflecting taxpayers' attitudes towards profit maximization, ethical conduct, tax compliance, pollution, treatment of employees, and their education.

The questionnaire used in the study is presented in Table 1. In addition to measuring satisfaction with tax services, the questionnaire also collected data on various sociodemographic factors, such as gender, age, education, personal income, religion, marital status, type of settlement, employment status, employment sector, statistical region, and the industry of the company where the taxpayer is employed. This data is partially included in the presentation of the research results. The questionnaire included closed-ended statements.

Table 1: Statements used in the questionnaire

A: Information
A1. The information on the eDavki portal seems very useful. A2. The accessibility and timeliness of information is generally satisfactory. A3. Comprehensibility of information on the eDavki portal is generally satisfactory. A4. The general notices on the eDavki portal are beneficial.
B: System quality
B1. Registration with a digital certificate on the eDavki portal is easy. B2. Users of the eDavki portal find it easy to access tax documents (VAT, payroll tax, etc.). B3. The content on the eDavki portal is appropriately organized. B4. The eDavki portal allows quick submission of tax returns. B5. FURS provides timely information about changes in tax legislation and rules. B6. The eDavki portal provides users with numerous advantages when fulfilling tax obligations. B7. Expertise and experience are required to submit forms via the eDavki portal.
C: Service quality
C1. The eDavki portal provides a telephone number for issues. C2. The eDavki portal offers the option to speak with a live person if there is an issue. C3. The eDavki portal has representatives available online to assist customers. C4. FURS' services are generally satisfactory. C5. FURS's simplification and updating of customer relations are overall satisfactory. C6. The accessibility and responsiveness of the employees at the FURS are overall satisfactory. C7. The FURS's lawful, unbiased, and equal treatment of customers is overall satisfactory. C8. The eDavki portal enables quick and easy submission of forms (VAT, payroll taxes, income tax advance payments, etc.). C9. The flexibility of the FURS in resolving matters is satisfactory.
D: Trust
D1. The eDavki portal does not share personal data with other websites. D2. The eDavki portal effectively protects personal data. D3. The reliability of the eDavki portal (e.g., it never crashes or freezes) increases my trust in it. D4. Knowing that the eDavki portal provides contact information increases trust in it. D5. eDavki portal is, overall, highly usable. D6. The portal eDavki portal gives a sense of independent use.
E: Sustainable responsibility
E1. The primary responsibility of the organization where I am employed (or studying) is to focus on increasing profit. E2. The responsibility of the organization where I am employed (or studying) is to allocate a portion of its funds for humanitarian purposes. E3. The responsibility of the organization where I am employed (or studying) is to prioritize ethical principles over economic profit. E4. The responsibility of the organization where I am employed (or studying) is to comply with legislation, even if it would improve business performance to do otherwise. E5. The responsibility of the organization where I am employed (or studying) is to assume full financial responsibility for environmental pollution caused by its activities.

Source: Horan and Abhichandan (2010), (GOV.si, 2022), Vetrih (2024).

Note: FURS (Financial administration of the Republic of Slovenia) and eDavki (eTaxes).

Using a five-point Likert scale (with values ranging from 1 – strongly disagree, 2 – disagree, 3 – neither agree nor disagree, 4 – agree, 5 – strongly agree), we obtained quantitative data on taxpayers' attitudes and opinions regarding various aspects of the tax authority's services. IBM SPSS Statistics software was used in the empirical analysis.

We applied Cronbach's alpha for the five factors (i.e., questionnaire sections). Cronbach's alpha is one of the most used measures of internal consistency of items on a scale and estimates the correlations between items (Vaske et al., 2016). Alpha reflects the reliability of a questionnaire by estimating how well a set of items measures a single construct (Tavakol and Dennick, 2011).

Based on our research idea and literature review, we formulated four hypotheses, as previously explained. The first and second hypotheses test the existence of a positive linear relationship between variables. In contrast, the third and fourth hypotheses examine whether the means of the variable for the two groups are equal. To test the third and fourth hypotheses, we used the non-parametric Mann-Whitney test, which does not assume a normal distribution of variables and is often considered a non-parametric alternative to the t-test for independent samples. The t-test compares the population means, whereas the Mann-Whitney test compares the population medians of two groups and can also detect differences in the distribution of the variable (Hart, 2001). MacFarland and Yates (2016) recommend using the Mann-Whitney test for ranked (typically ordinal) data when the data do not follow a normal distribution and in the case of differently sized groups. We applied correlation analysis for the first and second hypotheses and examined the strength and direction of the linear relationship between variables.

4. Empirical data and analyses

This section details the methodology of a study evaluating taxpayers' satisfaction with TA e-services in Slovenia, including an in-depth explanation of the data collection process, measurement techniques, and data processing methods.

4.1. Descriptive statistics and Cronbach's alpha

The descriptive statistics results reveal that most participating taxpayers are female (65%), while 35% are male. Regarding age demographics, 56.7% of participants are 49 years old or younger, whereas 43.3% are over the age of 50. A more detailed presentation of these results can be found in Table 2.

Table 2: Number and percentage of taxpayers by age group and gender

Age group \ Gender	Male	Female	Total
Up to and including 49 years	24 (35.3%)	44 (64.7%)	68
50 years and more	18 (34.6%)	34 (65.4%)	52
Total	42 (35.0%)	78 (65.0%)	120

Source: Author's calculations

We proceeded by calculating Cronbach's alpha for each section of the questionnaire. In sections B, C, and D, the values were lower than 0.7 (precisely 0.530, 0.686, and 0.573, respectively), which is considered below the lower threshold for good reliability. Therefore, we attempted to improve the reliability of these three sections by eliminating certain statements. After excluding statements B7, C9, and D5, we obtained Cronbach's coefficient values, presented in Table 3. For section D (Trust), the result remained below 0.7 but still represents acceptable reliability. As Taber (2018) explains, these threshold values for alpha serve merely as a rule of thumb. His review of threshold values across numerous empirical studies shows that some authors consider a Cronbach alpha of 0.61 to indicate moderate reliability. Thus, the scales, calculated as the arithmetic means of the individual statement values within each section, are reliable and internally consistent.

Table 3: Values of Cronbach's alpha coefficient by sections of the questionnaire

Section	Cronbach's alpha	Reliability
A Information	0.906	excellent
B System quality	0.891	good
C Service quality	0.885	good
D Trust	0.610	acceptable
E Sustainable responsibility	0.775	good

Source: Author's calculations

4.2. Results of hypothesis testing

We tested hypothesis H1 (Taxpayers' satisfaction with the TA's information is positively linearly related to their trust in the TA) using correlation analysis (Table 4), as we aimed to assess the strength of the linear relationship between the variables *information* and *trust*. The Pearson correlation coefficient is 0.466, indicating a moderate positive linear relationship between the variables. The p-value is less than 0.001, meaning the correlation coefficient is statistically significantly different from 0. Therefore, we can confirm hypothesis H1, as increased taxpayer satisfaction with the TA's information is related to increased trust in the tax administration.

Table 4: Correlation coefficient for hypothesis H1

		Trust
Information	Pearson Correlation	0.466
	Sig.(2-tailed)	<0.001
	N	120

Source: Author's calculations

For hypothesis H2 (The satisfaction of taxpayers with the quality of TA services is positively linearly related to the sustainable responsibility of taxpayers), we also conducted a correlation analysis (Table 5). The Pearson correlation coefficient is 0.371, indicating a weak positive linear relationship between the variables, nearing a moderate correlation. The statistical significance is less than 0.001, meaning the probability of this correlation occurring by chance is less than 0.1%. Based on the data obtained, we can confirm hypothesis H2, indicating that the sustainable responsibility of taxpayers increases with their satisfaction with the quality of TA services.

Table 5: Correlation coefficient for hypothesis H2

		Sustainable responsibility
Service quality	Pearson Correlation	0.371
	Sig.(2-tailed)	<0.001
	N	120

Source: Author's calculations

For hypothesis H3 (Older taxpayers are, on average, more satisfied with the services of the TA than younger taxpayers), we conducted a non-parametric analysis (Mann-Whitney test). The results are presented in Table 6. We found that the p-value of the one-sided Mann-Whitney test is 0.0055 (0.011 divided by 2), indicating statistically significant differences between age groups at the 5% significance level. Therefore, we can confirm hypothesis H3.

Table 6: Mann-Whitney U-test for hypothesis H3

Age group	N	Mean Rank	Sum of Ranks	Sig.
Up to and including 49 years	68	53.46	3635.00	
50 years and more	52	69.71	3625.00	
Total	120			0.011

Source: Author's calculations

For hypothesis H4 (Male and female taxpayers-beneficiaries are, on average, equally satisfied with the TA services), we also performed a Mann-Whitney test (Table 7). The results reveal a p-value of 0.963, indicating no statistically significant differences in satisfaction between the genders. Hypothesis H4 is thus confirmed.

Table 7: Mann-Whitney U-test for hypothesis H4

Gender	N	Mean Rank	Sum of Ranks	Sig.
Male	42	60.30	2532.50	
Female	78	60.61	4272.50	
Total	120			0.963

Source: Author's calculations

We also tested the robustness of the results for hypotheses H3 and H4 using an independent samples t-test. Although the data are not normally distributed, the t-test is known to be robust against the assumption of normality (Posten, 1984). Rasch et al. (2007) provide an overview of studies on the robustness of statistical tests for two independent samples and conclude that, in most applications, the independent samples t-test is sufficiently robust to be recommended in almost every case. We also conducted a homogeneity of variance (Levene's) test and considered potential non-homogeneity. For H3, the p-value of the one-sided t-test is 0.007, leading us to reject the null hypothesis of equal means across both age groups and accept the research hypothesis H3 that older taxpayers are, on average, more satisfied with the quality of TA services. For hypothesis H4, the p-value of the two-sided t-test is 0.677, meaning we cannot reject the null hypothesis that there are no differences in average satisfaction with the quality of services between genders. Thus, for both hypotheses, the results are consistent across the Mann-Whitney test and the t-test.

5. Results and discussion

This study focused on examining taxpayer satisfaction with TA services. Four hypotheses were tested, the results of which provide valuable insights into the tax system's functioning and user satisfaction.

The H1 explored confirmed the positive linear relationship between taxpayers' satisfaction with the information provided by the TA and their trust in it, as reflected in a Pearson correlation coefficient of 0.466. The results showed that, on average, taxpayers satisfied with the usefulness, accessibility, timeliness, comprehensibility of the information trust more. TA is not sharing their personal data with others, effectively protecting data, is more reliable. This means that taxpayers' trust increases

with the higher quality of information provided by the TA. Similar findings were reached by Horan and Abhichandani (2006), whose research confirmed that the usefulness of information is a strong and important factor in emotional satisfaction. Similarly, among the variables with the strongest effect on perceived public value is efficiency along with usefulness, while privacy is important but not as much (Connolly et al., 2017). Previous research by the Slovene TA also confirmed that a large portion of users (67 %) are satisfied with the accessibility and timeliness of information, and with the clarity of information (73 %) (GOV.si, 2022). However, nearly one-third of users still rate this aspect of the services as inadequate. Even though neither study measured the correlation, a high level of trust was identified by Horan and Abhichandani (2006) and the Slovene TA (GOV.si, 2022), where 81 % of users expressed satisfaction with the protection of data confidentiality.

The H2 examined the relationship between satisfaction with the quality of TA services and the sustainable responsibility of taxpayers. We found a positive linear correlation between the two variables, confirmed by a Pearson coefficient of 0.371. The correlation suggests that taxpayers' sustainable responsibility increases with higher satisfaction with the TA's services. These results confirm Riska et al. (2024) and Adekoya et al. (2020) conclusions. Tax services affect sustainable tax behavior (tax compliance). Taxpayers who are more satisfied with the services of the TA are more sustainably aware.

The H3 was confirmed, as the p-value was 0.011. It examined the differences in satisfaction between older and younger taxpayers with the services. On average, older users in Slovenia are more satisfied with the TAs' services than younger ones. The quality of services included providing a phone number for issues, the possibility of consulting in case of problems, simplifying and modernizing operations by the TAs, accessibility and responsiveness of employees, lawful, impartial, and equal treatment of clients, and flexibility in resolving issues. Since differences in satisfaction with the TAs' services between the age groups were confirmed, they could be attributed to users' experience and knowledge. Older taxpayers are more familiar with the functioning of the tax system and have more experience and tax knowledge with the TAs' services. On the other hand, younger taxpayers, who may be more accustomed to digital tools, are more likely to express dissatisfaction when encountering difficulties navigating the eDavki portal. To increase satisfaction among younger taxpayers, the TA could develop specific training programs that would equip younger users with the knowledge and skills to manage their tax obligations more effectively. The results align with Horan and Abhichandani's (2006) study, which found that older users were more satisfied than younger ones. However, these findings contradict those of Islam et al. (2015, p. 163), where younger individuals were reported to be more satisfied than older ones, due to the younger generation's greater 'computer savvy'. A direct comparison of this study's results with those of Connolly et al. (2017) and the TA survey in Slovenia (GOV.si,

2022) is difficult, as the latter did not consider age groups. Connolly et al. (2017) assessed the variable 'Contact' as a weak contributor, explaining that taxpayers are computer literate and expect to engage with a government website that understands and addresses their concerns proactively. Similarly, the Slovenian TA survey (GOV.si, 2022) showed that taxpayers are satisfied with the professionalism of the staff (41 %) and the assistance in resolving issues (42 %). Transparency of operations, accuracy and reliability of execution, flexibility in resolving matters, and the simplification and modernization of client-related processes were rated as satisfactory by 40 % of taxpayers. As can be concluded, there is significant room for improvement.

The H4 examined the differences in satisfaction between genders and showed that there is no statistically significant difference between male and female taxpayers. A p-value of 0.963 confirms that both genders are equally satisfied with the TA's services. It indicates that users, regardless of gender, are similarly informed and have the same level of tax knowledge about the TA services and does not suggest any potential gender disparity in treatment. This is consistent with the findings of studies by Connolly et al. (2017) and Ilias et al. (2009), in which the authors conclude that service quality does not differ between genders. Although differences in satisfaction between genders are not present, it is important for the TA to continue ensuring equal treatment of all taxpayers. This includes providing accessible services that meet the needs of all groups, regardless of gender and age.

6. Conclusions

In an era where digitalization and technological advancements are rapidly transforming the interaction between taxpayers and TA, assessing user satisfaction with TA e-services becomes crucial for ensuring their quality and effectiveness. TA must adapt to the needs and expectations of their taxpayer to enhance their effectiveness and build public trust.

The primary goal of our research was to evaluate the level of taxpayer satisfaction with TA services and to understand the factors affecting their experience with these services. The eDavki portal offers numerous benefits for both users and the TA. Using the collected data, we identified key areas that require improvements. One advantage is that taxpayers can easily fulfill their obligations without the need to visit tax offices, leading to greater efficiency and cost reduction. Despite these advantages, some challenges remain. TA in Slovenia should place more emphasis on the usefulness, accessibility, timeliness, clarity, and usability of information, as well as on the security and operation of the system. This focus could enhance taxpayer trust in the TA, as supported by the confirmed positive linear relationship in H1. The quality of information is crucial, as poor, or unclear information can lead to confusion and distrust. It is important that the TA not only provides information

but also ensures that it is easy to understand and accessible to all taxpayers. For this reason, it is recommended to develop additional mechanisms to quickly gather the feedback on the clarity and usefulness of the information, which could further strengthen taxpayers' trust in the TA. By improving tax services, taxpayers could also become more sustainably responsible, as evidenced by the positive linear relationship between service quality and sustainability responsibility in H2. The TA should consider incorporating sustainability principles into its services and communication with taxpayers. Through research and education on sustainable development, the TA could raise awareness of the importance of sustainable responsibility and encourage taxpayers to take an active role in this process. As shown in H3, older taxpayers are more satisfied than younger ones. The results of H3 suggest that lower satisfaction with TA services among the younger generation could be improved by enhancing tax knowledge through targeted programs aimed at young taxpayers. The TA should improve responsiveness, trust, and staff assistance for taxpayers to equalize satisfaction between older and younger taxpayers. Both genders in Slovenia are equally satisfied with the TA's services, indicating no significant gender disparity in treatment (H4).

This study contributes to the existing literature on satisfaction with TA and the factors influencing this perception process. During the research, we encountered several limitations that must be considered when analyzing and interpreting the collected data. One key limitation relates to the time periods of the studies used for comparison. The studies referenced come from different time periods, presenting specific challenges in comparing results. We must consider the technological advancements and changes in TA services, as well as the development of the tax system, over the past decade. Older studies conducted before the widespread adoption of digital solutions in Slovenia (eDavki portal) may not reflect the current level of technological support available to users today. Digital tools, such as online portals and mobile apps, have facilitated easier and faster access to services and reduced the need for physical visits to tax offices, increasing user satisfaction and optimizing procedures. However, developments have not only occurred in technology but also in legislative changes that have impacted how taxpayers meet their obligations. Despite the limitations, the results of this study contribute to the literature and can be beneficial for users, specifically TAs, in measuring and analyzing the perceived satisfaction of taxpayers with their services.

As the questionnaire was limited to studying the usability and effectiveness of TA services in Slovenia, future research could be expanded in various directions, implementing other factors, such as perceived fairness, transparency, and integrity of the tax administration in the study. In future research, it would be also meaningful to examine the differences in tax knowledge between younger and older taxpayers, as this could help more accurately identify which types of knowledge need to be enhanced among the youth to increase their satisfaction.

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Ocjenjivanje zadovoljstva poreznih obveznika e-uslugama porezne uprave

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Sažetak

Kako se porezne uprave širom svijeta moderniziraju pomoću digitalnih tehnologija, razumijevanje zadovoljstva poreznih obveznika njihovim uslugama postaje ključno. Glavni cilj istraživanja bio je procijeniti odnos između zadovoljstva e-uslugama porezne uprave i čimbenika kao što su povjerenje, kvaliteta usluga, dob i spol, čime se adresira uočeni nedostatak u postojećoj literaturi. Upotrebom upitnika distribuiranog među poreznim obveznicima u Sloveniji testirane su četiri hipoteze. Osim deskriptivnih metoda, korištene su Pearsonova korelacijska analiza, T-testovi i Mann-Whitney U-testovi. Rezultati pokazuju pozitivnu korelaciju između kvalitete e-usluga i povjerenja, kao i održivosti, ali niže zadovoljstvo e-uslugama porezne uprave kod mlađe generacije. Razlike u spolu ne postoje, jer su muški i ženski porezni obveznici jednako zadovoljni e-uslugama. Rezultati sugeriraju, da poboljšanje upotrebljivosti, jasnoće i sigurnosti poreznih informacija povećava povjerenje i zadovoljstvo poreznih obveznika. Kvalitetne informacije ne uzrokuju zabunu i nepovjerenje, te je s perspektive poreznih obveznika ključno osigurati dostupne i lako razumljive informacije, kao i brze mehanizme povratnih informacija, kako bi se povećala jasnoća i ojačalo povjerenje poreznih obveznika. Mlađi porezni obveznici mogli bi imati koristi od ciljanih edukativnih programa.

Ključne riječi: porezna uprava, kvaliteta usluge, povjerenje, dob, spol

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