

DETERMINANTS OF DIGITAL PAYMENT USAGE IN SERBIA

Marija ANTONIJEVIĆ¹

Ivana DOMAZET²

* Odgovorni autor E-mail: marija.antonijevic@ien.bg.ac.rs

Abstract

This paper aims to identify the key drivers of digital payment (DP) usage in Serbia by examining the impact of socio-demographic characteristics. The data were obtained from the latest Global Findex database (2025) and included 974 respondents. Binary logistic regression was employed to determine the influence of gender, age, education, labor force status, income, and urbanicity on the likelihood of conducting DP. The results indicate that gender, age, education, labor force status and income are statistically significant predictors, whereas urbanicity has no statistically significant influence at 10% significance level. The key findings suggest that individuals aged 55+ have approximately 55% lower odds of using digital payments than those aged 18–34, while individuals out of the workforce have 76% lower odds compared to economically active individuals. Additionally, individuals with tertiary education or higher have nearly ten times greater odds of using digital payments than those with primary education or less, while those with secondary education have approximately 3.7 times higher odds. Moreover, individuals in higher income groups (from the third to the fifth quintile) are significantly more likely to use digital payments than those in the lowest income quintile, whereas no significant differences are observed for the second income quintile. The results also indicate no significant differences between urban and rural residents, while gender differences are only weakly significant. Analysis of the marginal effects confirms that digital payment usage is most strongly associated with higher educational attainment, active labor force participation, and higher income, while it is significantly lower among older respondents (55+). Gender differences are weakly significant, whereas no significant differences are observed between urban and rural residents. These insights contribute to a better understanding of individuals' profiles and behavior, thereby providing a basis for formulating strategies to increase the use of digital payment channel.

Keywords: *gender, age, education, employment, urbanicity, income, digital payments, Global Findex Database*

JEL: *G21, D12, O33*

¹ Marija Antonijević, Research Assistant, Institute of Economic Sciences, Zmaj Jovina 12, Belgrade, Serbia, +381 11 2623 055, marija.antonijevic@ien.bg.ac.rs, ORCID ID (<https://orcid.org/0000-0002-7212-7794>)

² Ivana Domazet, Principal Research Fellow, Institute of Economic Sciences, Zmaj Jovina 12, Belgrade, Serbia, +381 11 2623 055, ivana.domazet@ien.bg.ac.rs, ORCID ID (<https://orcid.org/0000-0002-3493-4616>)

INTRODUCTION

The rapid expansion of internet connectivity, widespread ownership of mobile devices, and the adoption of digitally oriented lifestyles have significantly contributed to the diffusion of digital financial services. Furthermore, the COVID-19 pandemic accelerated the use of these services (Kovinić, 2022). Digital payments have gained increasing importance due to their contribution to economic growth (Kahveci & Gurgur, 2025; Aguilar et al., 2024; Pang et al., 2022) as well as their role in promoting financial inclusion (Minarni, 2025; Shahan & Sharaf, 2025; Rathnayake & Kasturiratne, 2024; Ocharive & Iworiso, 2024). In addition to facilitating in-store transactions through debit and credit cards and mobile devices, which enable faster payment processing, online payment solutions also offer benefits such as time efficiency, continuous availability, and reduced transaction costs. Nevertheless, concerns related to security risks and system reliability remain important challenges associated with the use of digital payment services (Thirupathi et al., 2019). Despite the evident advantages, the usage of digital payment methods is not uniform across individuals, as various barriers continue to limit their usage. Effective utilization of digital payment channels and, in general, digital solutions requires an adequate level of digital skills (Domazet & Marjanović, 2025; Lazić et al., 2025a; Lazić et al., 2025b; Domazet & Marjanović, 2024; Antonijević et al., 2023; Ivanović et al., 2021; Ivanović & Simović, 2020), stable internet access, and access to appropriate devices such as smartphones, tablets, or computers. Consequently, financial systems need to be more inclusive, especially for vulnerable groups (Savić, 2025). Therefore, it is essential to examine potential differences in the acceptance and usage of digital payment instruments within national contexts. Additionally, it is important to foster digital transformation and support continuous innovation in order to build national competitiveness and promote a digital society (Domazet & Marjanović, 2026; Domazet & Marjanović, 2025; Domazet et al., 2024). Moreover, providers of digital financial services need to improve their marketing strategies, as different socio-demographic groups may exhibit distinct attitudes and behavioral responses to market-related innovations (Stavljanin et al., 2017).

According to the Statistical Office of the Republic of Serbia (2025), approximately 90% of respondents reported having internet access, while 71.7% owned a desktop computer, 52.2% a laptop, and 95.8% a mobile phone. In terms of usage patterns, around 90% of individuals used the internet during the previous three months, whereas 5.2% reported never having used it. Similarly, 71.8% used a computer in the same period, while 13.3% had never used one. Mobile phone usage was reported by 97.3% of survey participants. Regarding online activities, 41.6% of respondents used internet banking services, including mobile banking, in the last three months. Moreover, 53.6% engaged in online shopping during this period, while 23.9% reported never purchasing goods or services online, suggesting the presence of persistent barriers even among internet users.

The importance of digital payment adoption for GDP growth is evident, as a 1% increase in digital payment adoption is associated with a 6%–8% rise in the GDP growth rate, based on panel data from 50 countries (Birigozzi et al., 2025). For policymakers and regulators, understanding who uses digital payments and who

remains excluded is essential for designing targeted measures to enhance digital financial inclusion. Moreover, digital payments provide tax authorities with more detailed insights into economic activity and can contribute to higher tax revenues (Gupta et al., 2017), while also enhancing transparency (Raj et al., 2021). From the perspective of financial institutions, the use of digital payments can deepen relationships with customers, enabling institutions to better understand their financial needs and identify strategies to increase usage by tailoring offerings to specific socio-demographic groups. Additionally, this approach supports more efficient digital business models.

Although numerous studies have examined the impact of socio-demographic characteristics on digital payment usage, limited attention has been devoted to the role of residential location, particularly the urban–rural dimension, while empirical evidence from Serbia remains limited. In this context, the present study aims to identify the key determinants of digital payment usage in Serbia by analyzing the effects of widely applied socio-demographic variables (gender, age, education, labor force status, and income) alongside urbanicity. The novelty of this study lies in providing recent empirical evidence from Serbia based on the latest World Bank Global Findex Database (2025 edition, covering 2024 data), thereby addressing the limited availability of country-specific research in this context. The study provides a comprehensive analysis of socio-demographic disparities in digital payment usage. In addition, reporting marginal effects alongside odds ratios offers a more precise assessment of the magnitude of differences across population groups relative to their respective reference categories. This paper contributes to the literature by expanding the relatively limited body of evidence from transition economies. It provides an empirical assessment of the factors shaping digital payment usage, enabling a clearer identification of the most relevant predictors. In addition, it offers valuable evidence for regulators, financial institutions, and practitioners seeking to develop targeted strategies that foster the wider use of digital payment solutions and a more inclusive digital society.

This paper is organized as follows. The literature review section presents a systematic overview of relevant studies and formulates hypotheses regarding the relationship between socio-demographic factors and digital payment behavior. The methodology section describes the sample, variable operationalization, and the statistical techniques applied. The results section reports the outcomes of hypothesis testing using binary logistic regression. The discussion section interprets the findings, compares them with previous research, and outlines implications and study limitations. Finally, the conclusion summarizes the main results and provides directions for future research.

LITERATURE REVIEW

Previous studies have extensively examined the influence of gender on the use of digital financial channels. A statistically significant gender effect has been reported by Ghosh and Hom Chaudhury (2022), Dzogbenuku et al. (2022), and Banerjee and Pradhan (2022). In contrast, Lohana and Roy (2023) and Chamboko (2022) found that gender does not represent a significant determinant of digital financial service

usage. Menezes and Kavyashree (2024) further emphasized gender-based differences in access to and utilization of digital payment technologies, highlighting the need for gender-responsive strategies and policy approaches. Given the important role of women entrepreneurs in fostering economic growth and inclusive development (Gulvira et al., 2024), Feranita et al. (2024) demonstrated that the adoption of digital technologies is strongly influenced by human and financial capital, underscoring the importance of improving access to skills development and financial resources. In addition, Purwoto et al. (2025) stressed the relevance of enhancing digital financial literacy among women entrepreneurs. These findings are further supported by persistent gender disparities in financial literacy (Haag & Brahm, 2025; Preston et al., 2024), labor market participation and income levels (ILOSTAT, 2025), as well as digital skills proficiency (Acilar & Sæbø, 2023). Based on the evidence from prior research, the following hypothesis is proposed:

H1: Gender has a statistically significant influence on DP.

Age has been widely recognized as a significant determinant of digital financial behavior (Sahoo et al., 2025; Andaregie et al., 2024; Lohana & Roy, 2023; Banerjee & Pradhan, 2022; Chamboko, 2022; Chaudhury, 2022; Dzogbenuku et al., 2022; Olaleye et al., 2022; Abayomi et al., 2019; Stavins, 2016). Ge et al. (2025) and Vercruyssen et al. (2023) emphasize that older adults are more likely to experience digital exclusion due to lower levels of digital literacy. Furthermore, the reduced propensity of older individuals to adopt digital financial solutions may be explained by technological incompatibility and technology-related anxiety (Han & Ko, 2025), higher risk aversion (Nolte & Hanoch, 2024), as well as concerns related to privacy and security, limited access to relevant information, and resistance to change (Msweli & Mawela, 2021). Based on the empirical evidence, Hypothesis H2 is formulated as:

H2: Age has a statistically significant influence on DP.

Educational attainment has been widely identified as a significant determinant of digital financial service adoption (Rouse et al., 2025; Sahoo et al., 2025; Andaregie et al., 2024; Lohana & Roy, 2023; Chamboko, 2022; Stavins, 2016). Individuals with higher levels of education tend to demonstrate a greater propensity to use digital financial channels compared to those with lower educational attainment. Jeyapaul (2024) further emphasized that higher education is associated with stronger financial capabilities and knowledge. Moreover, Njanike and Mpofu (2024) and Shabir and Ali (2022) identified education as a key explanatory factor of financial inclusion. In contrast, Chaudhary et al. (2022) reported no statistically significant relationship between educational level and digital banking usage. Based on the existing empirical evidence, the following hypothesis is formulated:

H3: Education has a statistically significant influence on DP.

Previous research indicates that individuals who participate in the labor market are more likely to adopt digital financial services (Çera et al., 2024). One possible explanation is that employed individuals typically require a bank account to receive wages, which increases their engagement with formal financial systems. In addition, time constraints associated with working schedules may encourage the use of digital channels for bill payments and financial transactions. Higher disposable income

among employed individuals may further stimulate the demand for digital financial services. Empirical evidence from the United States shows that employed individuals have approximately 60% higher odds of using digital payment services compared to unemployed individuals (Sinha et al., 2025). Similarly, Onyia and Tagg (2011) confirm that employment status plays a significant role in shaping the adoption and usage of digital financial services. Considering all previously mentioned, the hypothesis H4 is formulated as:

H4: Labor force status has a statistically significant influence on DP.

Income has been widely identified as a significant determinant of digital financial services usage (Sahoo et al., 2025; Andaregie et al., 2024; Almanaseer et al., 2024; Lohana & Roy, 2023; Chamboko, 2022; Olaleye et al., 2022; Shankar et al., 2020; Abayomi et al., 2019; Stavins, 2016). Empirical evidence provided by Rouse et al. (2025) indicates that individuals with higher income levels exhibit 9.44% higher odds of adopting digital banking services, including mobile banking applications. This may be attributed to higher disposable income and a greater capacity to satisfy needs beyond basic consumption. In contrast, Onyia and Tagg (2011) reported no statistically significant relationship between income and digital banking adoption. Drawing on the overall empirical evidence, the following hypothesis is proposed:

H5: Income has a statistically significant influence on DP.

Prior research indicates that the area of residence significantly influences the adoption of digital payment methods. Hsieh et al. (2013) found that individuals living in urban areas are more likely to use digital financial solutions. This relationship can be explained by the higher concentration of digitally skilled and technologically literate users in urban environments, whereas rural populations tend to be older and have lower educational attainment on average (Conrad et al., 2019). In addition, Albort-Morant et al. (2022) emphasize that rural areas are often characterized by population aging and depopulation. Based on the above, hypothesis H6 is formulated as follows:

H6: Urbanicity has a statistically significant influence on DP.

METHODOLOGY

The study adopts a quantitative, cross-sectional research design with an explanatory orientation. The analysis focuses on individuals in Serbia and their payment behavior. The final sample consists of 974 respondents, obtained after excluding “Don’t know” and “Refuse to answer” responses. Detailed socio-demographic characteristics of the sample are presented in Table 1.

In this study, digital payment refers to in-store transactions conducted using a debit or credit card or a mobile phone, as well as online payments made when individuals purchase goods or services via the internet.

Table 1. Socio-demographic characteristics of the sample

Variable		Percentage of respondents
Gender	Female	56.6
	Male	43.4
Age	18–34	18.5
	35–54	32.5
	55+	49.0
Education	Primary school or less	13.1
	Secondary school	69.3
	Tertiary education or more	17.6
Labor force status	In the workforce	53.8
	Out of the workforce	46.2
Income quintile	1	14.8
	2	18.5
	3	21.1
	4	20.6
	5	24.9
Urbanicity	Rural	61.1
	Urban	38.9
Digital payment	Yes	43.8
	No	56.2

n=974

Source: Authors' calculation

To examine the impact of socio-demographic factors on digital payment (DP) usage, secondary data from the latest Global Findex Database (2025 edition) were used. Data collection was funded by the World Bank and implemented by Gallup Inc. The data were collected between May and December 2024. A detailed summary of the variables, including variable names, types, coding schemes, and data sources, is presented in Table 2.

Table 2. Description and coding of the variables

Variable type	Variable Name	Abbreviation	Coding	Data Source
Independent	Gender	GEN	1=Female 2=Male reference category: Female	Global Findex Database (2025 edition, based on 2024 survey data)
	Age	AGE	1= 18–34 2= 35–54 3= 55+ reference category: 18–34	
	Education	EDU	1= Primary school or less 2= Secondary school 3=Tertiary education or more reference category: Primary school or less	
	Labor force status	LFS	1= In the workforce	

Variable type	Variable Name	Abbreviation	Coding	Data Source
			2= Out of the workforce reference category: In the workforce	
	Income quintile	INC	From 1 to 5, where 1= poorest 20% of population, and 5= richest 20% of population reference category: Income quintile 1	
	Urbanicity	URB	1= Rural 2=Urban reference category: Rural	
Dependent	Digital payment	DP	1=Yes 0 =No	

n=974

Source: Authors

Binary logistic regression and marginal effects were estimated using STATA, with digital payment usage as the dependent variable and socio-demographic characteristics as the independent variables. The estimated binary logistic regression model can be presented as follows:

$$DP = \beta_0 + \beta_1 GEN + \beta_2 AGE + \beta_3 EDU + \beta_4 LFS + \beta_5 INC + \beta_6 URB \quad (1)$$

where β_0 is the intercept, while β_1 – β_6 are coefficients measuring the effect of independent variables on the log-odds of digital payment usage. Predictors were coded as dummy variables, with one category serving as the reference group.

RESULTS

Based on the descriptive statistics presented in Table 3, the results indicate a nearly identical prevalence of digital payment usage among women and men (55.72% and 56.74%, respectively). Individuals aged 35–54 represented the most active users of digital payment channels (79.18%), followed by those aged 18–34 (67.22%), whereas the lowest usage rate was observed among respondents aged 55 and above (36.69%). Regarding educational attainment, respondents with tertiary education or higher exhibited substantially greater digital payment usage (83.63%) than those with secondary education (57.04%) or primary education or less (14.84%). In addition, individuals in the workforce demonstrated markedly higher usage rates than those outside the workforce (78.05% versus 30.67%). Digital payment usage also increased progressively across income quintiles, rising from 38.19% in the lowest quintile to 72.43% in the highest quintile. Finally, urban residents reported a higher level of digital payment use (62.27%) than rural residents (52.27%).

Table 3. Frequency of digital payments by socio-demographic factors

Variable		Digital payment	
		Yes	No
Gender	Female	307	244
	Male	240	183
Age	18–34	121	59
	35–54	251	66
	55+	175	302
Education	Primary school or less	19	109
	Secondary school	385	290
	Tertiary education or more	143	28
Labor force status	In the workforce	409	115
	Out of the workforce	138	312
Income quintile	1	55	89
	2	81	99
	3	113	93
	4	122	79
	5	176	67
Urbanicity	Rural	311	284
	Urban	236	143

n=974

Source: Authors' calculation

Given the observed differences in usage levels across socio-demographic groups, it is necessary to assess whether these factors exert a statistically significant influence on digital payment usage. The results (Table 4) indicate that the estimated model demonstrates superior explanatory power compared to the null model, as evidenced by the Omnibus test p-value being below the 0.1 significance threshold. Furthermore, the Hosmer–Lemeshow test ($\chi^2 = 2.217$; *df* = 8; p-value = 0.974) indicates adequate model fit, with no statistically significant differences between observed and predicted values. The classification results show that the model correctly classified 76.6% of cases, with higher predictive accuracy for digital payment users (81%) than for non-users (71%). The Cox and Snell *R*² value of 30.4% and the Nagelkerke *R*² value of 40.7% further indicate that the model has satisfactory explanatory power.

Table 4. Results of the binary logistic regression

Variable	B	S.E.	Wald	df	Sig.	Exp(B)	90% C.I. for EXP(B)	
							Lower	Upper
GEN (Male)	-.311	.161	3.715	1	.054	.733	.562	.955
AGE			31.316	2	.000			
AGE (35-54)	.280	.242	1.342	1	.247	1.323	.889	1.970
AGE (55+)	-.802	.214	14.003	1	.000	.449	.315	.638
EDU			41.209	2	.000			
EDU (Secondary school)	1.313	.284	21.346	1	.000	3.719	2.330	5.936
EDU	2.300	.358	41.203	1	.000	9.979	5.534	17.992

Variable	B	S.E.	Wald	df	Sig.	Exp(B)	90% C.I. for EXP(B)	
							Lower	Upper
(Tertiary education or more)								
LFS (Out of the workforce)	-1.426	.177	64.813	1	.000	.240	.179	.321
INC			16.683	4	.002			
INC 2	.438	.270	2.633	1	.105	1.550	.994	2.417
INC 3	.770	.265	8.410	1	.004	2.159	1.395	3.341
INC 4	.786	.271	8.413	1	.004	2.194	1.405	3.427
INC 5	1.026	.270	14.461	1	.000	2.789	1.790	4.345
URB (Urban)	-.089	.168	.282	1	.595	.915	.694	1.206
Constant	-.510	.371	1.890	1	.169	.600		

Note: Reference categories: gender (women), age (18-34), education (primary school or less), labor force status (in the workforce), income (income quintile 1), and urbanicity (rural).

The results of the binary logistic regression indicate that several socio-demographic factors significantly influence the usage of digital payments. Gender is a weakly significant predictor at the 10% level ($p = 0.054$), suggesting that male respondents have lower odds of using digital payments than females ($B = -0.311$; $\text{Exp}(B) = 0.733$). Age shows a statistically significant overall impact ($p = 0.000$), where individuals aged 35–54 do not differ significantly, whereas those aged 55 and above have significantly lower odds of using digital payments ($B = -0.802$; $\text{Exp}(B) = 0.449$) compared to the reference group (18–34). These findings suggest that older individuals are less likely to adopt digital payment methods. Education is a strong and statistically significant determinant ($p = 0.000$). Respondents with secondary education have 3.7 times higher odds ($\text{Exp}(B) = 3.719$) of using digital payments, while those with tertiary education or higher have almost 10 times higher odds ($\text{Exp}(B) = 9.979$) than those with primary education or less. This pattern indicates that higher levels of education substantially increase the likelihood of adopting digital payment technologies. Labor force status exerts a statistically significant influence on digital payment usage ($p = 0.000$). Specifically, individuals out of the workforce have 76% lower odds of using digital payments compared to those in the workforce ($\text{Exp}(B) = 0.240$), highlighting the important role of labor market participation in shaping payment behavior. Income level has a statistically significant overall effect ($p = 0.002$). The results show that individuals in the third, fourth, and fifth income quintiles are more likely to use digital payments than those in the lowest income quintile. On the contrary, individuals in the second income quintile do not differ significantly in their likelihood of using digital payments compared with those in the first quintile ($p = 0.105$). These results indicate that lower-income groups face greater barriers to adopting digital payment channels. The analysis reveals that respondents' residential areas do not have a statistically significant impact on digital payment usage ($p = 0.595$).

The results indicate that H1–H5 are not rejected at the 10% significance level, whereas H6 is rejected. In addition to odds ratios, marginal effects were estimated to illustrate differences across categories of the explanatory variables (Table 5).

Table 5. Marginal effects of the variables

Description	Marg. Eff.	Std. Error	p>z	p	90% confidence interval	
					Lower	Upper
GEN (Male)	-.0514114	.0264318	-1.95	0.052	-.0948878	-.0079349
AGE						
AGE (35-54)	.0488264	.0424611	1.15	0.250	-.0210158	.1186686
AGE (55+)	-.1495605	.039989	-3.74	0.000	-.2153366	-.0837844
EDU						
EDU (Secondary school)	.2434672	.051332	4.74	0.000	.1590335	.3279009
EDU (Tertiary education or more)	.4167165	.0631311	6.60	0.000	.3128751	.5205579
LFS (Out of the workforce)	-.2810165	.0367427	-7.65	0.000	-.3414529	-.2205802
INC						
INC 2	.0767246	.0470802	1.63	0.103	-.0007155	.1541646
INC 3	.1338359	.0457881	2.92	0.003	.0585213	.2091506
INC 4	.1365694	.0469176	2.91	0.004	.0593968	.2137419
INC 5	.1767022	.046772	3.78	0.000	.0997692	.2536352
URB (Urban)	-.0147368	.0276789	-0.53	0.594	-.0602646	.030791

Source: Authors

The analysis indicates that substantial differences in socio-demographic characteristics significantly shape the probability of using digital payments. Compared to women, men exhibit a 5.1 percentage point lower probability, although this effect is only weakly significant at the 10% level. Additionally, individuals aged 55 and above have a 14.96 percentage point lower probability of using digital payments than those aged 18-34, while individuals aged 35-54 do not differ significantly from the reference group. The reasons could be lower levels of digital skills among older people, greater resistance to adopting new digital solutions, and a preference to use cash. Also, older individuals may perceive greater risk and exhibit lower trust when conducting digital transactions. These findings confirm the barriers faced by the older population in achieving digital financial inclusion. Respondents with secondary and tertiary education or more have 24.35 and 41.67 percentage points higher probabilities of using digital payments compared to those with primary education or less. Both effects are statistically significant ($p < 0.01$). These results highlight the importance of educational attainment in fostering the usage of digital payment solutions. Regarding labor force status, individuals who are out of the workforce have a 28.1 percentage-point lower probability of using digital payments than those in the workforce. This can result from greater exposure to formal financial systems, regular income flows, and higher demand for advanced payment methods among economically active individuals. The findings also suggest the presence of income-related disparities. Specifically, respondents in the third, fourth, and fifth income quintiles show significantly higher probabilities of using digital payments, by

13.38, 13.66, and 17.67 percentage points, respectively. This may be explained by higher disposable income, which enables the purchase of a wider range of goods and services. Moreover, findings indicate that urbanicity does not have a statistically significant effect on the probability of using digital payments ($p = 0.594$), suggesting that there are no systematic differences between urban and rural residents.

DISCUSSION

The findings of the binary logistic regression indicate that gender, age, education, labor force status, and income are significant predictors, whereas urbanicity is not significant at the 10% level. The significant effect of gender is consistent with the findings of Ghosh and Hom Chaudhury (2022), Dzogbenuku et al. (2022), and Banerjee and Pradhan (2022), who identified significant gender disparities. In contrast, Lohana and Roy (2023) and Chamboko (2022) reported no gender-based differences in the use of digital financial channels. Regarding the age, the results are in line with a large body of empirical evidence (Sahoo et al., 2025; Andaregie et al., 2024; Lohana & Roy, 2023; Banerjee & Pradhan, 2022; Chamboko, 2022; Chaudhury, 2022; Dzogbenuku et al., 2022; Olaleye et al., 2022; Abayomi et al., 2019; Stavins, 2016), indicating that older individuals are less likely to use digital payment methods. Education also emerges as a significant determinant, consistent with prior studies (Rouse et al., 2025; Sahoo et al., 2025; Andaregie et al., 2024; Lohana & Roy, 2023; Chamboko, 2022; Stavins, 2016), suggesting that individuals with higher levels of education are more likely to perform digital payments compared to those with lower educational attainment. The significant role of labor force status in shaping digital payment behavior is supported by earlier research (Çera et al., 2024; Sinha et al., 2025; Onyia & Tagg, 2011). Furthermore, the results reveal a significant effect of belonging to income quintile groups from the first to the fifth quintile on digital payment use, which is consistent with previous findings (Rouse et al., 2025; Sahoo et al., 2025; Andaregie et al., 2024; Almanaseer et al., 2024; Lohana & Roy, 2023; Alnemer, 2022; Chamboko, 2022; Olaleye et al., 2022; Shankar et al., 2020; Abayomi et al., 2019; Stavins, 2016). These findings indicate that digital payment usage varies across income groups, reflecting income-related inequalities. In this context, Antonijević et al. (2024) also show that women's financial inclusion is significantly influenced by education, employment, and income. Regarding urbanicity, the results indicate that the area of residence has no significant impact on digital payment usage, which is inconsistent with the findings of Hsieh et al. (2013), who argue that individuals living in urban areas are more likely to use digital financial solutions. A potential explanation for this finding is that the basic conditions for access to and use of digital tools are widely met in Serbia, thereby reducing disparities in digital payment usage between urban and rural areas. Internet access and internet usage are both highly widespread, covering around 90% of the population. Mobile phone ownership and usage also exceed 90%, while ownership and use of other digital devices remain substantial: 71.7% of households own a desktop computer, 52.2% a laptop, and 71.8% of individuals used a computer during the previous three months (Statistical Office of the Republic of Serbia, 2025). In addition, data from the World Bank Global Findex Database (2025 edition, covering 2024 data) indicate that credit card ownership in Serbia reached 78%. Taken together, these indicators suggest

that a large share of the population has the infrastructure, devices, and basic digital access needed to use digital payment services. Another possible explanation is that individuals in rural areas may be more aware of the time and travel costs associated with cash withdrawals and visits to physical service locations, while also recognizing the advantages of using cards for in-store and online purchases.

Based on the overall findings, relevant institutions in Serbia should prioritize strategies to improve digital payment adoption among older individuals, individuals with lower levels of education, individuals outside the labor force, and individuals with lower disposable income. In addition, Raičević and Mitrović (2018) emphasize that bank-provided digital services should be of high quality to ensure adequate user satisfaction and foster customer loyalty.

Despite its theoretical and practical contributions, this study has several limitations. First, the analysis is based on respondents from Serbia, which limits the generalizability of the findings. Second, the model includes only a limited set of independent variables, highlighting the need to incorporate additional determinants in future research. Third, the cross-sectional design captures behavior at a single point in time, preventing the analysis of changes in behavioral patterns over time.

CONCLUSION

The results of this study, which aimed to identify the key drivers of digital payment usage, indicate that socio-demographic characteristics play a critical role in shaping individuals' payment behavior. Specifically, age, education, labor force status, income, and gender are statistically significant predictors at the 10% significance level, whereas urbanicity is not a statistically significant variable. Older individuals, those with lower levels of education, individuals outside the workforce, and respondents from lower-income groups have substantially lower odds of using digital payment methods. This study contributes to the existing body of literature in both local and international contexts by providing empirical evidence from Serbia. Moreover, the findings offer valuable insights for relevant stakeholders, including commercial banks, the National Bank of Serbia, and the Ministry of Finance, in designing targeted strategies and policy measures to promote the adoption and effective use of digital payment instruments in Serbia. In light of the identified limitations, several directions for future research are proposed. First, future studies should include respondents from countries with varying levels of economic development to enable cross-country comparisons of digital payment behavior. Second, the inclusion of additional explanatory variables, such as digital skills, marital status, personal innovativeness, and financial literacy, is recommended to further enrich the analytical framework. In addition, examining the underlying reasons for the non-adoption of digital payment methods would deepen understanding of user behavior. Third, future research should adopt a longitudinal design to capture changes in digital payment usage over time.

LITERATURE

- Abayomi, O. J., Olabode, A. C., Reyad, M. A. H., Teye, E. T., Haq, M. N., & Mensah, E. T.** (2019). Effects of demographic factors on customers' mobile banking services adoption in Nigeria. *International Journal of Business and Social Science*, 10:1, 63–77.
- Abdallah, F., Antonijević, M., & Domazet, I.** (2025). Determinants of Women's Financial Inclusion: Evidence from the Gulf and the Western Balkan Region. *Journal of Women's Entrepreneurship and Education*, (3-4), 95-112.
- Acilar, A., & Sæbø, Ø.** (2023). Towards understanding the gender digital divide: A systematic literature review. *Global knowledge, memory and communication*, 72:3, 233-249.
- Aguilar, A., Frost, J., Guerra, R., Kamin, S., & Tombini, A.** (2024). *Digital payments, informality and economic growth* (BIS Working Papers No. 1196). Bank for International Settlements. <https://www.bis.org/publ/work1196.pdf>
- Albort-Morant, G., Sanchís-Pedregosa, C., & Paredes Paredes, J. R.** (2022). Online banking adoption in Spanish cities and towns. Finding differences through TAM application. *Economic research-Ekonomska istraživanja*, 35:1, 854-872.
- Almanaseer, S. R., Al-Slehat, Z. A. F., Al Sharif, B. M., Aloshaibat, S. D., Al-Haraisa, Y. E., & Almahasneh, M. A.** (2024). Financial literacy and mobile banking usage: The moderating role of demographic characteristics. *International Review of Management and Marketing*, 14:6, 424-432.
- Alnemer, H. A.** (2022). Determinants of digital banking adoption in the Kingdom of Saudi Arabia: A technology acceptance model approach. *Digital Business*, 2:2, 100037.
- Andaregie, A., Abebe, G. K., Gupta, P., Worku, G., Matsumoto, H., Astatkie, T., & Takagi, I.** (2024). Exploring individuals' socioeconomic characteristics and digital infrastructure determinants of digital payment adoption in Ethiopia. *Digital Business*, 4:2, 100092.
- Antonijević, M., Domazet, I., Kojić, M., & Simović, V.** (2024). Financial Inclusion-A Driving Force for Women's Entrepreneurship Development. *Journal of Women's Entrepreneurship and Education*, (3/4), 73-92.
- Antonijević, M., Ivanović, Đ., & Vukmirović, V.** (2023). Is There a Relationship between Making Digital Payments and Internet Usage, Digital Skills, and Education Worldwide?. *Proceedings*, 85:1, 11.
- Banerjee, A. K., & Pradhan, H. K.** (2022). Influence of demographic profiles in adoption of digital payment system in India: A multigroup invariance analysis. *Technology Analysis & Strategic Management*, 1 -17.
- Birigozzi, A., De Silva, C., & Luitel, P.** (2025). Digital payments and GDP growth: A behavioural quantitative analysis. *Research in International Business and Finance*, 75, 102768.
- Çera, G., Khan, K. A., & Solenički, M.** (2024). Linking Individual Demographics to Antecedents of Mobile Banking Usage: Evidence from Developing Countries in Southeast Europe. *Global business review*, 25:5, 1150-1170.
- Chamboko, R.** (2022). On the role of gender and age in the use of digital financial services in Zimbabwe. *International Journal of Financial Studies*, 10:3, 82.
- Conrad, A., Neuberger, D., Peters, F., & Rösch, F.** (2019). The impact of socio-economic and demographic factors on the use of digital access to financial services. *Credit and Capital Markets-Kredit und Kapital*, (3), 295-321.
- Domazet, I. S., & Marjanović, D.** (2024). Digital Progress and Information Society: Evidence From EU Countries and Serbia. In *Driving Decentralization and Disruption With Digital Technologies* (pp. 1-20). IGI Global Scientific Publishing.

- Domazet, I., & Marjanović, D.** (2025). Digital transformation as a factor in the economic development of Montenegro. In Mohammed Albakri (Ed.) *Perspectives on Digital Transformation in Contemporary Business* (pp. 81-112). IGI Global.
- Domazet, I., & Marjanović, D.** (2026). National competitiveness in the Western Balkans: Challenges and Opportunities. In Christiansen B. & Zhuplev A. (Eds.) *National Competitive Advantage Amid Rapid Global Transformation* (pp. 315-350). IGI Global.
- Domazet, I., Marjanović, D., Ahmetagić, D., Bugarčić, M., & Simović, V.** (2024). Business Sector Investment in R&D as a Factor for Improving Innovation-Evidence from Hungary, Romania, Bulgaria, and Serbia. *Eastern European Economics*, 62:1, 50-68.
- Domazet, I., Marjanović, D., Beraha, I. & Ahmetagić, D.** (2022). Innovative capacity as a driving force of national competitiveness. *Ekonomika preduzeća*, 70:7-8, 406-418.
- Dzogbenuku, R. K., Amoako, G. K., Kumi, D. K., & Bonsu, G. A.** (2022). Digital payments and financial wellbeing of the rural poor: The moderating role of age and gender. *Journal of International Consumer Marketing*, 34:2, 113–136.
- Feranita, N. V., Mahendrawan, A. D., & Asmuni, A.** (2024). Determinants of Digital Technology Adoption Among Women Entrepreneurs. *Journal of Women's Entrepreneurship and Education*, (1-2), 66-92.
- Ge, H., Li, J., Hu, H., Feng, T., & Wu, X.** (2025). Digital exclusion in older adults: A scoping review. *International Journal of Nursing Studies*, 105082.
- Ghosh, C., & Hom Chaudhury, R.** (2022). Determinants of digital finance in India. *Innovation and Development*, 12:3, 343–362.
- Gulvira, A., Ainash, M., Sagynysh, M., Meiramgul, A., & Aliya, K.** (2024). The impact of female entrepreneurship on economic growth in developing and developed economies. *ECONOMICS-Innovative and Economics Research Journal*, 12:2, 145–162.
- Gupta, S., Keen, M., Shah, A., & Verdier, G.** (2017). Reshaping public finance. *Digital Revolutions in Public Finance*. International Monetary Fund.
- Haag, L., & Brahm, T.** (2025). The Gender Gap in Economic and Financial Literacy: A Review and Research Agenda. *International Journal of Consumer Studies*, 49:2, e70031.
- Han, J., & Ko, D.** (2025). Mobile financial service adoption among elderly consumers: The roles of technology anxiety, familiarity, and age. *FinTech*, 4:3, 36.
- Hsieh, T. C., Yang, K. C., Yang, C., & Yang, C.** (2013). Urban and rural differences: Multilevel latent class analysis of online activities and e-payment behavior patterns. *Internet research*, 23:2, 204-228.
- ILOSTAT.** (2025). What labour income reveals about gender inequalities at work. <https://ilostat.ilo.org/what-labour-income-reveals-about-gender-inequalities-at-work/>
- Ivanović, Đ., & Simović, V.** (2020). DigComp: Methodological Frame for measuring digital competencies. *Trendovi u poslovanju*, 8:1, 83-92.
- Ivanović, Đ., Simović, V., Domazet, I., & Antonijević, M.** (2021). Average matching levels for two DigComp competence areas of the female entrepreneurs in Serbia. *Journal of Women's Entrepreneurship and Education*, (3-4), 42-60.
- Jeyapaul, P. P.** (2024). The relationship between education level and banking adoption among street vendors—A financial inclusion viewpoint. *Journal of Informatics Education and research*, 4:3, 2851-2860.
- Kahveci, E., & Gurgur, T.** (2025). Digital Payments and Sustainable Economic Growth: Transmission Mechanisms and Evidence from an Emerging Economy, Turkey. *Journal of Theoretical and Applied Electronic Commerce Research*, 20:2, 142.
- Kovinić, N.** (2022). Analiza upotrebe elektronskog bankarstva u Republici Severnoj Makedoniji i Crnoj Gori za vreme pandemije virusa COVID-19 i razvoj elektronskog bankarstva u budućnosti. *Finansije*, 1–6/2022, 92 – 104.

- Lazić, M., Simović, V., & Domazet, I.** (2025b). Digital competences and disability: a contribution to a more inclusive digital society. *Universal Access in the Information Society*, 24:2, 1623-1642.
- Lazić, M., Simović, V., Domazet, I., & Abdallah, F.** (2025a). Predictive Insights into Digital Competencies: A Data-Driven Approach to Inclusion. *Journal of Technology in Human Services*, 1-28.
- Lohana, S., & Roy, D.** (2023). Impact of demographic factors on consumer's usage of digital payments. *FIIB Business Review*, 12:4, 459-473.
- Menezes, A., & Kavyashree, K.** (2024). Impact of Gender on the Various Aspects of Digital Payment System: A Banking Empirical Study from India. *Electronic Journal of Business and Management, Special Issue*, 38-48.
- Minarni, E.** (2025). Impact of Digital Payment Systems on Financial Inclusion and Small Business Growth in Developing Economies. *International Journal of Innovation and Thinking*, 2:1, 1-12.
- Msweli, N., & Mawela, T.** (2021). Financial inclusion of the elderly: Exploring the role of mobile banking adoption. *Acta Informatica Pragensia*, 10:1, 1-21.
- Njanike, K., & Mpofu, R. T.** (2024). Factors influencing financial inclusion for social inclusion in selected African countries. *Insight on Africa*, 16:1, 93-112.
- Nolte, J., & Hanoch, Y.** (2024). Adult age differences in risk perception and risk taking. *Current opinion in psychology*, 55, 101746.
- Ocharive, A., & Iworiso, J.** (2024). The impact of digital financial services on financial inclusion: a panel data regression method. *International Journal of Data Science and Analysis*, 10:2, 20-32.
- Olaleye, S. A., Balogun, O. S., Sanusi, I. T., & Dada, O. A.** (2022). The impact of age and income in using mobile banking apps: A study of association and classification. *International Journal of E-Business Research (IJEER)*, 18:1, 1-20.
- Onyia, O. P., & Tagg, S. K.** (2011). Effects of demographic factors on bank customers' attitudes and intention toward Internet banking adoption in a major developing African country. *Journal of Financial Services Marketing*, 16:3, 294-315.
- Pang, Y. X., Ng, S. H., & Lau, W. T.** (2022). Digital cashless payments and economic growth: evidence from CPI countries. *Capital Markets Review*, 30:2, 63-89.
- Preston, A., Qiu, L., & Wright, R. E.** (2024). Understanding the gender gap in financial literacy: the role of culture. *Journal of Consumer Affairs*, 58:1, 146-176.
- Purwoto, L., Rahmawati, C. H. T., Rahayu, T., & Abhedananda, E. A. S.** (2025). Digital Financial Literacy and Entrepreneurial Resilience of Women Entrepreneurs: A Moderated Model of Overconfidence. *Journal of Women's Entrepreneurship and Education*, (1-2), 1-25.
- Raičević, M., & Mitrović, D. M.** (2018). Satisfaction and loyalty of clients towards banking products and services. *Economic Analysis*, 51:3-4, 115-124.
- Rathnayake, N. D. N. B., & Kasturiratne, D.** (2024). Digital payments strategies for financial inclusion. In *E-financial strategies for advancing sustainable development: Fostering financial inclusion and alleviating poverty* (pp. 9-20). Cham: Springer Nature Switzerland.
- Raj L, V., S, A., & K, A.** (2021). Role of perceived countries' advantages of cashless economy in behavioral intentions of using cashless transactions: an empirical analysis. *Journal of Indian Business Research*, 13:3, 413-433.
- Rouse, M., Bátiz-Lazo, B., & Carbó-Valverde, S.** (2025). Trust and socio-demographic influences on mobile banking adoption in South Africa: a longitudinal study. *International Journal of Bank Marketing*, 43:10, 2112-2135.

- Sahoo, R., Pattanayak, N. C., & Panda, A. K.** (2025). Digital payments – A way forward to digital financial inclusion. *Journal of Emerging Technologies and Innovative Research (JETIR)*, 12:4, 475–481.
- Savić, K.** (2025). Digitalni evro–koncept, osobine i potencijalne prednosti i nedostaci. *Finansije*, 80:1-3, 68-82.
- Shabir, S., & Ali, J.** (2022). Determinants of financial inclusion across gender in Saudi Arabia: evidence from the World Bank's Global Financial Inclusion survey. *International Journal of Social Economics*, 49:5, 780- 800.
- Shahen, A. M., & Sharaf, M. F.** (2025). The role of digital payment technologies in promoting financial inclusion: a systematic literature review. *FinTech*, 4:4, 59.
- Shankar, A., Jebarajakirthy, C., & Ashaduzzaman, M.** (2020). How do electronic word of mouth practices contribute to mobile banking adoption?. *Journal of Retailing and Consumer Services*, 52, 101920.
- Sinha, G. R., Mehta, R. C., Kaittila, A., & Viitasalo, K.** (2025). Factors and patterns in mobile banking and payment services use in the United States. *Journal of Financial Services Marketing*, 30:4, 1-11.
- Statistical Office of the Republic of Serbia.** (2025). Usage of information and communication technologies in the Republic of Serbia, 2025. <https://publikacije.stat.gov.rs/G2025/Pdf/G202516020.pdf>.
- Stavins, J.** (2016). The effect of demographics on payment behavior: panel data with sample selection (No. 16-5). Working Papers.
- Stavljanin, V., Cvijović, J., & Kostić-Stanković, M.** (2017). Research of indirect advertising in video game industry. *Industrija*, 45(4), 113-132.
- Thirupathi, M., Vinayagamoorthi, G., & Mathiraj, S. P.** (2019). Effect of cashless payment methods: A case study perspective analysis. *International Journal of Scientific and Technology Research*, 8:8, 394-397.
- Vercruyssen, A., Schirmer, W., Geerts, N., & Mortelmans, D.** (2023). How “basic” is basic digital literacy for older adults? Insights from digital skills instructors. In *Frontiers in Education* (Vol. 8, p. 1231701). Frontiers Media SA.

ACKNOWLEDGMENT

The research presented in this paper was funded by the Ministry of Science, Technological Development and Innovation of the Republic of Serbia under contract number 451-03-33/2026-03.

CONFLICT OF INTERESTS

The authors declare that there are no financial, professional or personal relationships that could lead to bias in the results or interpretation of this research.

DETERMINANTE UPOTREBE DIGITALNIH PLAĆANJA U SRBIJI

Marija ANTONIJEVIĆ
Ivana DOMAZET

Apstrakt

Ovaj rad ima za cilj da identifikuje ključne determinante korišćenja digitalnih plaćanja (DP) u Srbiji ispitivanjem uticaja socio-demografskih karakteristika. Podaci su preuzeti iz najnovije Global Findex baze podataka iz 2025. godine, a uzorak obuhvata 974 ispitanika. Binarna logistička regresija primenjena je radi utvrđivanja uticaja pola, starosti, nivoa obrazovanja, radnog statusa, dohotka i stepena urbanizacije na verovatnoću korišćenja digitalnih plaćanja. Rezultati ukazuju da su pol, starost, obrazovanje, status na tržištu rada i dohodak statistički značajni prediktori, dok stepen urbanizacije nema statistički značajan uticaj na nivou značajnosti od 10%. Ključni nalazi sugerišu da osobe starosti 55 i više godina imaju približno 55% manje šanse da koriste digitalna plaćanja u odnosu na osobe starosti 18–34 godine, dok osobe koje nisu deo radne snage imaju za 76% manje šanse u poređenju sa ekonomski aktivnim pojedincima. Takođe, osobe sa tercijarnim ili višim nivoom obrazovanja imaju skoro deset puta veće šanse da koriste digitalna plaćanja u odnosu na osobe sa osnovnim ili nižim obrazovanjem, dok osobe sa srednjim obrazovanjem imaju približno 3,7 puta veće šanse. Pored toga, pojedinci iz viših dohodovnih grupa (od trećeg do petog kvintila) imaju značajno veće šanse da koriste digitalna plaćanja u odnosu na najsiromašniji deo populacije, dok za drugi dohodovni kvintil nisu uočene statistički značajne razlike. Rezultati takođe ukazuju da ne postoje statistički značajne razlike između urbanih i ruralnih stanovnika, dok su rodne razlike slabo statistički značajne. Analiza marginalnih efekata potvrđuje da je upotreba digitalnih plaćanja najizraženije povezana sa višim nivoom obrazovanja, aktivnim učešćem na tržištu rada i višim prihodima, dok je značajno niža kod starijih ispitanika (55+). Rodne razlike su slabo statistički značajne, dok između urbanih i ruralnih stanovnika nisu uočene statistički značajne razlike. Ovi nalazi doprinose boljem razumevanju profila i ponašanja korisnika, čime se obezbeđuje osnova za formulisane strategije usmerenih ka povećanju upotrebe digitalnih kanala plaćanja.

Ključne reči: *pol, starost, nivo obrazovanja, radni status, stepen urbanizacije, dohodak, digitalna plaćanja, Global Findex baza podataka*