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Identifying User Behavioral Intentions Towards Accepting And Using Mobile Payment Systems: An Extended UTAUT2 Model

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Abstract

Background: Mobile payments represent a rapidly growing method of performing financial transactions, primarily due to the widespread use of smartphones and related technologies. Despite their numerous benefits, the global acceptance of mobile payments remains inconsistent, particularly in developing countries.

Purpose: This study aims to examine factors influencing the intention to accept and use mobile payment systems among consumers in Central Serbia. The research model is based on the UTAUT2 framework, extended by perceived trust and perceived risk.

Study design/methodology/approach: A quantitative research approach was employed, using a structured questionnaire distributed to 845 potential respondents, of which 239 valid responses were obtained. Data were analyzed using SPSS with descriptive statistics, correlation, and multiple regression analyses to test the proposed hypotheses.

Findings/conclusions: The study reveals that performance expectancy, effort expectancy, facilitating conditions, price value, habits, perceived trust, and perceived risk significantly influence behavioral intention to use mobile payments. Moreover, habits, behavioral intention, and facilitating conditions also significantly influence actual use behavior. Social influence and hedonic motivation were found to have no significant impact on behavioral intention. Additionally, perceived trust significantly reduces perceived risk, highlighting the interplay between these two constructs in user behavior. The model explains 72% of the variance in behavioral intention and 45.5% in use behavior.

Limitations/future research: The study is limited to Central Serbia, with a modest sample size and overrepresentation of older respondents. Future research should include broader geographic coverage and examine the moderating roles of gender and age on mobile payment adoption.

Keywords: Mobile payment, UTUT2, perceived risk and trust, behavioral intention, Serbia

Introduction

In the past few years, the pace of development of information and communication technologies has accelerated significantly, which has consequently affected the development of mobile technology and all those activities that are based on electronic and mobile commerce (Shareef, Davies &Rana, 2019). While the adoption of mobile technology is widespread and embedded in daily consumer activities, mobile payment remains relatively underutilized compared to other mobile services. (Schierz et al., 2010), because in general, consumers in Serbia reluctantly adopt new

payment systems due to their deeply rooted "status quo" behavior (Weichert, 2008). Smart mobile phones are used as a medium to carry out financial transactions called mobile payment, i.e. the process of money transfer through mobile phones without waiting in line at banks (Abrahão, Moriguchi & Andrade, 2016; Fatima, Kashif, Kamran & Awan, 2021). The mobile payment system enables combining the requested service with payment via a mobile phone, thus providing users with the opportunity to initiate, approve and realize a financial transaction in which money is transferred via a cellular network or wireless communication technologies (WLAN) to the recipient (Lu, Yang, Chau, & Cao, 2011; Slade, Williams & Dwivedi, 2013). As noted by de Sena Abrahão et al. (2016), advancements in technology and the growing prevalence of smartphone usage have encouraged consumers to engage in mobile-based purchasing and payment activities. A study on the habits and expectations of active card users, conducted in 2021 by Mastercard Serbia, shows that contactless payments using payment cards and mobile phones in Serbia are a reality for 81% of citizens. A third of respondents are interested in payments exclusively via mobile phones, i.e. contactless payments by mobile phone from an application that contains a digitized payment card. Actually, mobile payments refer to NFC (Near Field Communication) payments, contactless payments, digital wallets, mobile wallets, SMS-based payment methods, etc. In order to make a payment with a mobile phone, it is necessary for the user to have a payment card, to install a bank application that provides this service on a mobile device, or to activate the native application for mobile payment on the Android platform (Google Pay) or on the iOS platform (Apple Pay), turn on the NFC option on the phone and enter all the necessary data from the card into the selected application. Physically, mobile payment is realized by bringing the mobile phone to the POS terminal, which also accepts the option of contactless payment by payment card.

Acceptance and use of mobile payments by consumers is one of the most common research topics, making it a relevant and current research area (Hussain et al., 2018). One of the first studies on this topic is the one by Lee, Warkentin & Choi (2004) and Chen & Adams (2005), who investigate consumer behavioral intentions to accept and use a new payment system, mobile payment, in America and South Korea. Lee et al. (2004) identify important factors influencing individual adoption and acceptance of mobile payment technology. In finding factors, this study extends the perspective of previous studies by including the moderating role of technology anxiety in the relationship between intention and final adoption, and includes technological and demographic characteristics. Chen et al. (2005) develop a framework for future quantitative research on consumer behavior and motivations related to mobile payment adoption. Looking at previous studies on this topic, their research focus is mainly on Western countries, such as the USA (Morosan & DeFranco, 2016), Great Britain (Slade et al., 2015), Finland (Karjaluoto et al., 2020), France (Koenig-Lewis et al., 2015) and in the last few years countries like Bangladesh (Hussain et al., 2018) and India (Gupta et al., 2019). The main determinants of intentions to use mobile payment systems, which have been identified in previous literature, are perceived ease of use, perceived usefulness, perceived security, trust, social influence and facilitating conditions (Zhanga et al., 2011; Cocosila and Trabelsi, 2016; Karsen et al., 2019). Researchers frequently rely on a range of theoretical models—such as the Diffusion of Innovations, Theory of Planned Behavior, and Unified Theory of Acceptance and Use of Technology—to conceptualize user acceptance of technological innovations (Rogers, 1995; Eysen, 1985; Taylor & Todd, 1995; Davis et al., 1989; Venkatesh et al., 2003; Peter & Tarpey, 1975; Slade et al., 2013). Venkatesh et al. (2003) show that the UTAUT model provides a significantly better understanding of the behavioral intention and use behavior regarding a particular technology. The basic UTAUT model consists of four key factors, namely performance expectancy, effort expectancy, social influence and facilitating conditions (Venkatesh et al., 2003). Based on previous studies, it can be concluded that some authors extend the UTAUT model with different factors, resulting in a large number of different factors and extended UTAUT models for researching the adoption and use of mobile payment (Al-Saedi, Al-Emran, Ramayah&Abusham, 2020). In recent work, authors have expanded the UTAUT2 framework further by incorporating behavioral economics variables, gamification, and psychological trust triggers (Saravanos et al., 2022; Dahlhaus & Welte, 2025).

The research subject of in this paper is mobile payment systems, as well as factors that influence

the adoption and use of mobile payment systems. That is, this research focuses on the study and analysis of defined factors that influence consumers' intention to accept and use mobile payment systems in the Republic of Serbia. In the research part of the paper, the UTAUT2 model (Venkatesh, Thong, &Xu, 2012) is applied, and extended by perceived risk and perceived trust (Slade et al., 2013). Recent empirical research confirms the robustness and flexibility of the UTAUT2 model when applied to mobile payment adoption in different cultural and technological contexts (Wu & Liu, 2023; Sharma & Kaul, 2021). Previous research studies on the acceptance of mobile payment systems point to key factors affecting the adoption and use of mobile payment systems (Hongxia et al., 2011; Sripalawat et al., 2011; Yu, 2012; Zhou, 2012). Therefore, this study aims to examine the behaviors of respondents in Serbia in the context of their knowledge and skills in using mobile payment systems (Tsai and LaRose, 2015), ease of use of the chosen system, enjoyment of using it, sociological consequences faced by respondents when using mobile payments, the development of the infrastructure for the implementation of mobile payment systems (Smitha et al., 2012), the price of using the mobile payment service (Yang et al., 2012), the perceived risk and trust in the use of mobile payment systems (Abrahão et al., 2016).

The paper's objective is to identify the key determinants of respondents' behavioral intentions to accept and use mobile payment systems in general, in the Republic of Serbia in particular. Considering the research focus and aims, the study integrates both qualitative and quantitative methodologies. The qualitative approach is employed to establish a theoretical framework through a comprehensive literature review, which then informs the subsequent quantitative phase used to test the proposed hypotheses. The quantitative methodology is particularly suited for studies grounded in the Unified Theory of Acceptance and Use of Technology, as it enables the examination of relationships among multiple independent and dependent variables. The empirical part of the study was conducted in Central Serbia, involving adult respondents who provided answers via a structured survey. The collected data were analyzed using appropriate statistical techniques.

This study is organized into five main sections. Following the introduction, a review of the relevant literature is presented, forming the basis for the development of research hypotheses. The third section outlines the applied research methodology. In the fourth section, findings from the empirical investigation are discussed. The final section summarizes key conclusions, underscores the study's contributions, and proposes avenues for future research.

1. Literature Overview

Kim et al. (2010, p. 310) define mobile payment as "any payment in which a smartphone is used to initiate, authorize and execute a financial transaction". However, some authors believe that mobile phones without smart support can be used for mobile payment of various digital contents, such as music, video games, etc. (Kim et al., 2010; Petrvoic & Sakal, 2024). What is crucial for successful technology implementation is understanding the critical factors that encourage or challenge the acceptance of these new technologies among end users. Some of the studies already mentioned in the introduction use several different models to predict technology acceptance and use. According to Souiden, Ladhari and Chaouali (2021), the most commonly used models for assessing the acceptance of a specific technology are TAM, Technology Acceptance Model (Davis et al., 1989) and UTAUT, Unified Theory of Acceptance and Use of Technology. In the first years of application, both models were intended to be used in an organizational context, that is, to explain the adoption of modern and new technologies by employees. Hussain et al. (2018) believe that the UTAUT model is better for understanding compared to all other models, with Patil et al. (2020) sharing their views and propagating the popularity of the UTAUT model for examining the adoption of mobile payment technology. According to Gupta and Arora (2019), the UTAUT model represents a contemporary theory that emerged as a result of the synergy of eight different theories such as social cognitive theory (SCT) (Compeau and Higgins, 1995), theory of reasoned action (TRA) (Fishbein and Ajzen, 1975), motivation theories, technology acceptance model (TAM) (Davis et al., 1989), theory of planned behavior (TPB) (Ejsen, 1985), diffusion of innovation (DOI) (Rogers, 1995) and computer usage models. The UTAUT model consists of four key factors, namely performance expectancy, effort expectancy, social influence and facilitating conditions (Venkatesh et al., 2003). In addition,

the model includes factors such as gender, age, experience in using technology and voluntary use of a particular technology as moderator variables, which analyze and interpret differences in the behavior of different groups of people (Min et al., 2008) in different geographical areas. Vankatesh et al. (2012) expanded the basic UTAUT model by including three new behavioral factors, such as hedonic motivation, price value and habit, which led to the renaming of the old model to UTAUT 2. As opposed to the original UTAUT model, where a greater focus is placed on the organizational context, UTAUT2 emphasizes the consumer's perspective. As a pilot project of the new, extended model, a survey of the acceptability of mobile Internet technology was conducted in Hong Kong, the results of which show a positive impact on consumer's intention to use mobile Internet. The original UTAUT model investigated the influence of mobile phone users' attitudes on the adoption and use of mobile payment systems, as evidenced by a large number of research papers on this topic (Lee, Choi, & Warkentin, 2004; Peng, Xu, & Liu, 2011; Qasim and Abu-Shanab, 2016). Similarly, several authors have conducted research in the context of acceptance and use of mobile payment systems using the UTAUT 2 model (Koenig-Lewis et al., 2015; Morosan and DeFranco, 2016; Gupta et al., 2019; Fatima et al., 2021; Bommer et al., 2022). Hussain et al. (2018) also apply this theory to mobile payment in Bangladesh but extend it with an additional parameter, lifestyle, and examine its impact on behavioral intention. Some other scholars also focus on extending the theory by including other external variables, e.g. Brohi et al. (2018) analyze compatibility, risk and innovativeness, while Abrahão et al. (2016) examine perceived risk. When it comes to mobile payments, which involve money transfer electronically, perceived risk and trust are dominantly relevant and, therefore, these two factors represent the proposal of the extended UTAUT 2 model in this study (Slade et al., 2013).

Based on the review of the relevant literature, the paper conceives a new research model, which consists of the basic determinants of the UTAUT2 model, such as performance expectancy, effort expectancy, social influence, facilitating conditions, habit, price value, hedonic motivation, behavioral intention and use behavior, as well as additional behavioral factors such as perceived risk and perceived trust that extend the model. The results of previous studies have shown that perceived trust and risk are important factors in the adoption of mobile payment systems (Slade et al., 2013; Manaf & Ariyanti, 2017; Karjaluoto et al., 2020). According to this conceptual model, all these UTAUT2 variables directly influence the behavioral intention regarding mobile payment, and behavioral intention together with facilitating conditions and habit directly influences use behavior.

2. Methodology

2.1. Development of hypotheses and research model

Performance expectancy refers to the user's perception of a specific technology that provides benefits for the realization of certain activities (Venkatesh et al., 2012; Abdallah et al., 2018; Baabdullah et al., 2019; Savić & Pešterac, 2019). According to C. Goularte and Zilber (2018), performance expectancy represents the degree to which a person believes that using a specific technology will increase their efficiency. The three factors that dominantly affect performance expectancy are perceived usefulness, extrinsic (external) motivation and suitability for the job (Shin, 2009). Performance expectancy has been proven to be a key indicator of behavioral intention in various studies analyzing mobile banking (Oliveira, Faria, Thomas & Popovič, 2014; Sarfaraz, 2017; Abdallah et al., 2018; Baabdullah et al., 2019; Mohd Thas Thaker et al., 2021) and mobile commerce (Lai & Lai, 2010; Shaw and Sergueeva, 2019; Marinković et al., 2020). Several previous studies have identified a positive influence of performance expectancy on the attitude of mobile phone users in the context of acceptance and use of mobile payment systems (Berman & Thelen, 2018; Alaeddin et al., 2018; Gupta et al., 2020; Widyanto et al., 2021; Upadhyay et al., 2022). In accordance with the results of previous studies, the following research hypothesis is defined:

H1: Performance expectancy significantly affects consumers' behavioral intention to use mobile payment systems in Serbia.

Effort expectancy refers to the degree of ease of use experienced by the consumer when using a specific technology and innovation. This parameter is derived from the perceived ease of use as a component of the technology acceptance model (TAM) (Venkatesh et al., 2012). The easier a mobile payment system is to use, the more likely consumers are to use it to complete their

financial transactions. Research results have shown that this factor is relevant and crucial in various studies on mobile banking (Tan & Lau, 2016; Abdallah et al., 2018; Mohd Thas Thaker et al., 2022). Zhou et al. (2010) find a negative impact of bank clients' effort expectancy on the adoption and use of mobile banking technology, but at the same time confirm a positive relationship between effort expectancy and clients' performance expectancy. While prior studies have largely demonstrated that effort expectancy significantly impacts individuals' intention to adopt mobile payment technologies (Slade et al., 2013; de Luna et al., 2019; Shin & Lee, 2021), findings by Aslam et al. (2017) indicate that this relationship may not hold universally, as their research in Pakistan revealed no statistically significant link. According to the mentioned results, the following hypothesis is developed:

H2: Effort expectancy significantly affects consumers' behavioral intention to use mobile payment systems in Serbia.

Social influence represents the level to which consumers perceive the importance of using a certain technology based on the opinions of reference persons such as family, friends and colleagues (Baishya & Samalia, 2020; Upadhyay et al., 2022). Venkatesh et al. (2012, p. 159) define this factor as "the extent to which consumers perceive that people important to them (e.g. family and friends) trust and feel they should use a particular technology." This factor is significant for examining consumers in Serbia, because according to Malaquias and Hwang (2016), in developing countries, social influence plays a key role in the formation of trust in various modern technologies. That is, social influence represents the influence of people from an individual's immediate environment on his/her perceptions and overall behavior toward the adoption of a certain technology. Marinković and Kalinić (2017) believe that social influence loses its importance if the individual is not sufficiently informed and knowledgeable about a specific technology. Many previous studies have confirmed that social influence is directly related to an individual's behavioral intention to use mobile payment systems (Yang et al., 2012; Musa et al., 2015; Widyanto et al., 2021). For example, Slade et al. (2015) find that social influence has a positive statistical relationship with consumers' behavioral intentions to use mobile payment systems, while on the other hand, authors such as Gupta et al. (2019) conclude that social influence does not have a statistical effect on consumer behavioral intentions to accept and use mobile payment systems in India. Based on previous research, the following research hypothesis is defined:

H3: The social environment significantly influences consumers' behavioral intention to use mobile payment systems in Serbia.

Facilitating conditions refer to consumers' opinions about the availability of the necessary infrastructure, resources and support for the adoption and use of certain technologies (Venkatesh et al., 2012; Upadhyay et al., 2022). According to the original UTAUT model, performance expectancy, effort expectancy and social influence affect behavioral intention to use a particular technology, while behavioral intention to use and facilitating conditions also predict the use of that technology (Venkatesh et al., 2003). Several studies on this topic have found that facilitating conditions significantly influence consumers' behavioral intentions to use mobile payment systems (Cheong et al., 2004; Sivathanu, 2019). However, there are studies that have come to the conclusion that facilitating conditions do not have a positive impact on consumers' behavioral intention to use mobile payment systems (Brown et al., 2003; Oliveira et al., 2016). It is considered that availability and mobility of infrastructure (training and technological infrastructure) and knowledge to support the use of mobile payment systems would help consumers realize contactless payment through their smart mobile phones. According to the mentioned results, the following hypotheses are developed:

H4: Facilitating conditions significantly influence consumers' behavioral intention to use mobile payment systems in Serbia.

H4a: Facilitating conditions significantly affect the use of mobile payment systems in Serbia.

Hedonic motivation is defined as the fun or pleasure derived from the use of technology and has also been shown to play a key role in the technology acceptance process (Venkatesh et al., 2012; Brown and Venkatesh, 2005). Hedonic motivation is fundamentally related to the psychological and emotional experiences of an individual, which can be caused by character traits and cognitive states (Ryan &Deci, 2000). When it comes to studies that analyze the adoption of mobile banking technology, Baptista and Oliveira (2016) point out that hedonic motivation is a very

important indicator of bank customers' behavioral intention to accept the use of mobile banking. On the other hand, a study analyzing 48 empirical studies on this topic concludes that users of mobile payment systems expect to increase emotional value through enjoyment and fun, which arise when using these systems (Bommer et al., 2022). Based on previous research, the following research hypothesis is defined:

H5: Hedonic motivation positively predicts consumers' behavioral intention to use mobile payment systems in Serbia.

Price value is defined as "the consumer's psychological trade-off between the perceived benefits of using a chosen technology and the financial costs incurred as a result of using that technology" (Venkatesh et al., 2012, p. 161). Accordingly, the price value is positive when the benefits of adopting a technology are greater than the financial costs of using that technology (Baptista & Oliveira, 2016). An important distinction between consumer use and company use of technology is that end consumers usually bear the costs of implementation while company employees are exempt from those costs (Venkatesh et al., 2012). There are studies on this topic that have confirmed the influence of price value of a specific technology on consumers' behavioral intentions to use mobile payment systems (Chong, 2013; Susanto et al., 2020; Boomer et al., 2022), as well as those studies that find the opposite relationship between these two factors (Yang et al., 2012; Abrahão et al., 2016; Hussain et al., 2018). In accordance with the results of previous studies, the following research hypothesis is defined:

H6: Price value significantly affects consumers' behavioral intention to use mobile payment systems in Serbia.

Habits represent the ambition to use technology automatically as a result of learned behavior, whereby experience becomes an inevitable, but not crucial, condition for habit generation (Venkatesh et al., 2012; Slade et al., 2013). According to Limay et al. (2007), a habit is created solely on the basis of three mandatory criteria: past achievements and behavior, reflexive behavior, and the individual's life experience. Past behavior and achievements represent the user's previous behavior in specific situations and their discoveries. Reflexive behavior refers to customs that make everyday life known in advance. Individual experience refers to the accumulation of experiences from established routines, norms and habits for using technological products. Gupta et al. (2019) conclude that habit is the most convincing factor of behavioral intention to use, because today's generations increasingly use smartphones for the realization of daily life activities, which directly affects the development of the habit of performing various financial transactions via mobile phones. Other mobile payment literature highlights a positive relationship between habit and behavioral intention to use, as well as a positive relationship between habit and use behavior regarding mobile payment systems (Keramati, Taeb, Larijani&Mojir, 2012; Morosan et al., 2016; Hussain et al., 2018). Habitual behavior in mobile financial transactions has been further confirmed by recent empirical analyses on digital payment usage in post-COVID environments (Dahlhaus & Welte, 2025). The following research hypotheses are developed based on a review of previous studies:

H7: Habits significantly influence consumers' behavioral intention to use mobile payment systems in Serbia.

H7a: Habits significantly influence the use of mobile payment systems in Serbia.

Except for the UTAUT 2 model factors, some previous research has identified perceived risk and perceived trust as important potential influencing factors on the consumer's behavioral intention to use new and modern technological systems.

Perceived risk refers to any possible financial risk, social risk, and product-related risk that a consumer perceives when initiating an online transaction (Madan, 2016). Gillett (1976) points out that perceived risk is a key parameter for evaluating a purchase by consumers and that it varies depending on whether it is a conventional or unconventional purchase. Buying and paying via mobile phone is significantly riskier for consumers than traditional trade and payment at the point of sale. Mobile phones automatically store personal data, which can lead to security and privacy issues for those involved in any mobile phone transaction. Authors who integrate this factor in their research confirm its positive and negative impact on the behavioral intention to use mobile payment (Riquelme and Rios, 2010; Amoroso and Magnier-Watanabe, 2012; Slade et al., 2015; Susanto et al., 2022). Perceived risk can also be used as a moderator variable in examining the influence of behavioral intention to use on the use behavior when it comes to mobile payment

(Neto & de Figueiredo, 2022). Additional recent studies reinforce the critical role of trust and perceived risk, particularly in environments with lower digital literacy or regulatory uncertainty (Qasim et al., 2016; Apaua & Lallie, 2022; Sarini & Khasa, 2023). According to the mentioned results, the following hypothesis is developed:

H8: Perceived risk significantly affects consumers' behavioral intention to use mobile payment systems in Serbia.

The relationship between buyer and seller depends first of all on the mutual trust between them. Perceived trust is the subjective belief that the seller will fulfill their obligations to the buyer. Trust plays a crucial role in uncertain financial transactions where users of mobile payment systems are sensitive to possible financial losses (Lu et al., 2011; Slade et al., 2013). Mobile payment is more critical in terms of trust than other commercialized technological systems for several reasons: innovative versions of various programs and technological devices are constantly appearing, a dynamic environment and a huge presence of operators of different mobile providers. Previous studies on mobile payment adoption have recognized this factor as a strong predictor of behavioral intention to use mobile payments (Amoroso and Magnier-Watanabe, 2012; Arvidsson, 2014; Kumar et al., 2018). Widyanto et al. (2021) point out that perceived trust has a statistically significant and direct impact on consumers' behavioral intention to use a mobile payment system. On the other hand, perceived risk in that research has a negative direct impact on behavioral intention, but a positive indirect impact through perceived trust, as a mediator variable. According to Lim (2003), perceived trust predicts and reduces perceived risk while together these two factors predict consumers' attitudes and behavioral intentions to use mobile payments. Also, Slade et al. (2015) find that trust negatively affects respondents' perceived risk. Based on the above, the following hypotheses are derived:

H9: Perceived trust significantly affects consumers' behavioral intention to use mobile payment systems in Serbia.

H9a: Perceived trust significantly affects the perceived risk of mobile payment system users.

According to Venkatesh et al. (2012), behavioral intention represents the desire and ambition of the consumer to reliably use the future product. That is, that intention represents the potential probability that an individual will use the mobile payment system to achieve their own goals. In general, behavioral intentions can be considered the best indicator of actual consumer behavior, as proven when evaluating the use of any new technology (Liebana-Cabanillas et al., 2017; Kalinić et al., 2019; Gupta et al., 2019; Sivathanu, 2019). The proposed research model, which was used in this study, includes seven main factors that influence consumers' behavioral intention to use mobile payment. In addition to the usual seven factors of the UTAUT2 model, two additional factors (perceived risk and trust) that influence consumers' behavioral intention to use mobile payment are integrated into the research model. Therefore, the last research hypothesis is derived:

H10: Behavioral intentions to use mobile payment systems in Serbia significantly influence their use behavior.

Finally, the use of technology represents the dependent research variable, while behavioral intention is also positioned in the model as a dependent variable, with its impact on the use of technology also measured. In the context of mobile payments, there are only a few studies that have analyzed this relationship, that is, confirmed or rejected the potential influence of behavioral intention on the use of mobile payment systems (Gupta et al., 2019; Patil et al., 2020). According to the above, Figure 1 presents the proposed research model.

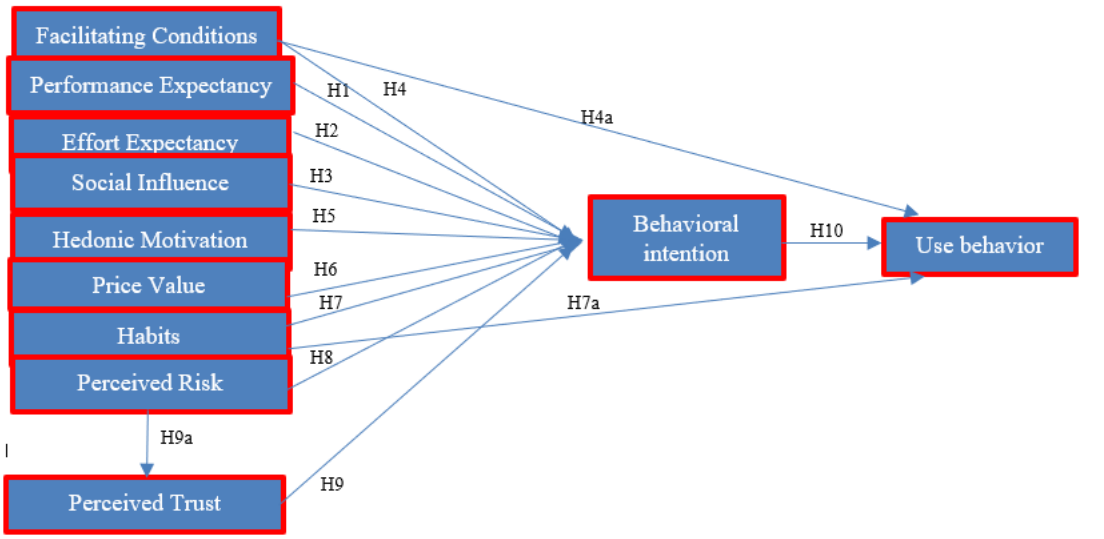

Figure 1 Research model
Source: the authors

2.2. Research methods

The empirical research is based on the analysis of primary data collected from 239 respondents through a questionnaire on the territory of Central Serbia, in order to identify the impact of key factors of mobile payment on consumers' behavioral intentions to use this technology to perform their daily financial transactions. The questionnaire was distributed to 845 different addresses online, and 28.2% of respondents (239 respondents) answered it in the period from 27 July 2024 to 19 August 2024. In order to get relevant answers, only respondents who had experience in using different mobile payment systems completed the questionnaire. Specifically, the questionnaire included an introductory note stating that only individuals who currently use or have previously used mobile payment services were eligible to participate. The content of the questionnaire was divided into two parts. In the first part of the questionnaire, respondents described their basic demographic characteristics (gender, age, professional education, work status), while the second part consisted of 38 items that were divided into 11 different groups, i.e. variables. Respondents expressed their degree of agreement with the given item based on a seven-point Likert scale, circling the grades from 1 (Absolutely disagree) to 7 (Absolutely agree). The statistical program SPSS (The Statistical Package for the Social Sciences) was used to process and analyze the collected primary data. Statistical methods such as descriptive statistical analysis, reliability analysis, correlation and regression statistical analysis were used in this study.

Table 1 Sample structure

Respondent characteristics		Frequency	Percentage
Gender	Man	105	43,9%
	Woman	134	56,1%
Age	18-24	44	18,4%
	25-44	143	59,8%
	45-55	40	16,7%
	55 and more	12	5,0%
Level of education	Secondary school	41	17,2%
	High school	27	11,3%
	Bachelor	101	42,3%
	Master	60	25,1%
	PhD	10	4,2%

Employment status	Employed	181	75,7%
	Unemployed	30	12,6%
	Student	22	9,2%
	Retiree	6	2,5%
Total		239	100%

Source: the authors

As shown in Table 1, there are more women (56.1%) than men (43.9) in the sample. Observed according to the age structure, the most numerous category of respondents is in the age group of 25 to 44 years (59.8%). When it comes to professional education, more than half of the sample consists of respondents with completed basic and master's academic studies (67.4%), followed by those with secondary education (17.2%) and those with high education (11.3%) while only 4.2% are respondents who obtained a doctorate. If the work status of the respondents is observed, a dominant representation of employed respondents (75.7%) is observed, while a significantly smaller number of respondents are unemployed (12.6%), students (9.2%) or retired (2.5%).

3. Results

Preliminary descriptive statistical analysis was conducted to assess the consistency of respondents' attitudes, focusing on the calculation of arithmetic mean and standard deviation values. Respondents' attitudes are more favorable when the value of the arithmetic mean is higher and vice versa, while if the values of the standard deviation are lower, the attitudes are more homogeneous and vice versa. It can be concluded on the basis of the calculated values of the arithmetic mean in Table 2 that the most favorable attitudes of the respondents are with the item "I believe that I can perform financial transactions faster via a smart mobile phone compared to performing cash transactions at the counter of a bank, post office, payment point, etc." where the value of the arithmetic mean is the highest and is M=6.48. On the other hand, the most unfavorable attitudes of respondents are with the item related to the perceived risk "I do not feel safe when giving personal data when using the mobile payment system" with the lowest arithmetic mean M=3.02.

The reliability and internal consistency analysis indicates that all variables demonstrate satisfactory levels, as reflected by Cronbach's Alpha values exceeding the 0.6 threshold (Robinson et al., 1991). The highest degree of reliability is characteristic for performance expectancy ($\alpha = 0.911$) and behavioral intentions ($\alpha = 0.943$), with other variables also characterized by a higher level of reliability (effort expectancy: $\alpha = 0.876$, social influence: $\alpha = 0.742$, facilitating conditions: $\alpha = 0.795$, hedonic motivation: $\alpha = 0.858$, habit: $\alpha = 0.749$, perceived trust: $\alpha = 0.894$, perceived risk: $\alpha = 0.869$, use behavior: $\alpha = 0.804$) When it comes to price value ($\alpha = 0.612$), it has the lowest degree of reliability of all the other analyzed variables, but it meets the limit value of reliability.

Table 2 Arithmetic mean and Cronbach's Alpha coefficients of the analyzed variables

	Items	Mean	Cronbach's α	Source
PE1	Using the mobile payment system helps me realize daily life activities faster and more easily.	6,21	0,911	Venkatesh et al., (2012); Al-Jabri (2015); Gupta &Arora (2019)
PE2	Using the mobile payment system makes it significantly easier for me to solve everyday life tasks.	6,00		
PE3	I find mobile payment systems very useful and easy to carry out financial transactions.	6,15		
PE4	I find that I can make financial transactions faster through a smartphone compared to making cash transactions at the counter of a bank, post office, payment point, etc.	6,48		
EE1	I find mobile payment systems easier to use.	6,07	0,876	Venkatesh et al., (2012); Gašević et al., (2016); Savić&Pešterac (2019)
EE2	I find it quite easy to learn how to use mobile payment systems.	6,20		
EE3	I find that using a mobile payment system does not require too much mental effort.	6,09		
EE4	I find mobile payment systems readily available.	6,20		
SI1	Friends and family advise me to use a mobile payment system.	4,94	0,742	Alalwan et al. (2017); Thakur and Srivastava (2013); Tak and Panwar (2017); Gupta &
SI2	People who influence my behavior think I should use a mobile payment system.	4,89		
SI3	Most of the people around me use the mobile payment system.	5,13		

SI4	People who use mobile payment systems in my environment are more respected than those who don't.	4,04		Arora, (2019)
FC1	I have all the necessary resources (smartphone, internet connection, mobile bank application, executed payment card, etc.) to use the mobile payment system.	6,40	0,795	Venkatesh et al., (2012); Gupta & Arora, (2019)
FC2	I have the necessary knowledge to use the mobile payment system.	6,37		
FC3	I can get help from others (online bank support, friends, etc.) when I have difficulties using mobile payment systems.	6,09		
HM1	Using the mobile payment system is pleasant.	5,90	0,858	Alalwan et al. (2017); Tak and Panwar (2017); Gupta & Arora (2019)
HM2	Using a mobile payment system is exciting.	5,05		
HM3	Using a mobile payment system is fun.	5,09		
PV1	I find that I can save money by using a mobile payment system.	5,36	0,612	Venkatesh et al., (2012)
PV2	Mobile payment systems provide their users with valuable promotions.	4,43		
H1	Using the mobile payment system has become a habit for me.	5,41	0,749	Alalwan et al. (2018); Tak and Panwar (2017); Gupta & Arora (2019)
H2	Using a mobile payment system is something I would do without a second thought.	5,51		
H3	I consider myself addicted to using mobile payment systems.	3,21		
PT1	I have absolute confidence in mobile payment systems.	5,27	0,894	Kalinić et al., (2019); Al-Saedi et al., (2019)
PT2	Mobile payment systems offer different services that are interesting to me.	4,87		
PT3	I find mobile payment systems reliable and secure.	5,46		
PT4	I believe that all the data on financial transactions carried out via mobile phone are reliable.	5,37		
PR1	I don't feel safe giving out personal information when using a mobile payment system.	3,02	0,869	Al-Saedi et al., (2019)
PR2	Friends and family advise me to use a mobile payment system.	3,03		
PR3	There is a high chance that something wrong can happen (incorrect data entry, theft, etc.) when using the mobile payment system.	3,61		
BI1	I intend to use the mobile payment system in the future.	6,10	0,943	Yu (2012); Tak and Panwar (2017); Gupta & Arora (2019)
BI2	I will continue to use the mobile payment system in the future.	5,97		
BI3	I will continue to use the mobile payment system because I have a smartphone that has internet access.	5,90		
BI4	I think it's a smart idea to use a mobile payment system.	5,93		
UB1	Sometimes I use the mobile payment system.	4,17	0,804	Tak and Panwar (2017); Gupta & Arora (2019)
UB2	I often use the mobile payment system to perform various financial transactions.	5,22		
UB3	I regularly use the mobile payment system to perform various financial transactions.	5,10		
UB4	I exclusively use the mobile payment system to perform various financial transactions.	4,17		

Note: PE – performance expectancy; EE – effort expectancy; SI – social influence; FC – facilitating conditions; HM – hedonic motivation; PV – price value; H – habit; PT – perceived trust; PR – perceived risk; BI – behavioral intention; UB - use behavior

Source: the authors

In order to examine the dependence between two (or more) variables, it is necessary to establish the existence of a correlation between those variables. A positive Pearson's coefficient indicates the tendency that the growth of the value of one variable is related to the growth of the value of another variable, while on the other hand there is also a negative Pearson's coefficient that also indicates the tendency that the growth of the value of one variable is related to the decline of another variable. For the value of positive or negative coefficient from 0 to 0.4 (-0.4) the correlation is weak, from 0.4 to 0.6 (-0.4 - -0.6) moderate, while a strong correlation exists when this coefficient is in the interval of 0.6 to 1 (-0.6 - -1). The results of the correlation analysis in Table 3 confirm that there is a statistically significant correlation, with a probability of 99% and 95%, among most pairs of variables. The correlation is statistically insignificant between perceived risk and facilitating conditions, as well as the price value because it is below the threshold level of statistical significance. The lowest degree of linear dependence is between perceived risk and social influence (r = -0.047**), while the highest degree of linear dependence is between behavioral intention and performance expectancy (r = 0.710**). Other pairs of variables show predominantly moderate correlations, as the Pearson coefficient between those variables averages around 0.5.

Table 3 Linear correlation

	PE	EE	SI	FC	HM	PV	H	PT	PR	BI	UB
PE	1										
EE	.657**	1									
SI	.260**	.353**	1								
FC	.599**	.637**	.229**	1							
HM	.588**	.626**	.331**	.435**	1						
PV	.348**	.383**	.332**	.201**	.538**	1					
H	.575**	.502**	.353**	.279**	.665**	.423**	1				
PT	.587**	.521**	.471**	.374**	.702**	.547**	.721**	1			
PR	-.332**	-.229**	-.047	-.145*	-.315**	-.113	-.261**	-.437**	1		
BI	.710**	.517**	.305**	.594**	.590**	.306**	.657**	.702**	-.377**	1	
UB	.567**	.470**	.373**	.403**	.551**	.327**	.599**	.574**	-.221**	.617**	1

**. Linear correlation is statistically significant at the 99% level
*. Linear correlation is statistically significant at the 95% level

Source: the authors

In order to test the set research hypotheses, a multiple regression analysis is conducted, which examines the influence of independent variables on the dependent variable, and the results are shown in Table 4. First of all, it is necessary to fulfill the condition of multicollinearity in order to successfully conduct a multiple regression analysis. The calculated values of the VIF coefficient range from 1.0 to 3.6 which is less than the accepted value of 5 (Akinwande, Dikko & Samson, 2015) and these values suggest that there is no problem of multicollinearity. According to the obtained results, performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit, perceived trust and perceived risk predict and describe 72% (R2 = 0.720) of the variability of respondents' behavioral intention to use mobile payment. The first regression analysis in the paper can conclude that performance expectancy ($\beta = 0.274$; $p < 0.01$), effort expectancy ($\beta = -0.17$; $p < 0.05$), facilitating conditions ($\beta = 0.353$; $p < 0.01$), habits ($\beta = 0.279$; $p < 0.01$), price value ($\beta = -0.09$; $p < 0.05$), perceived trust ($\beta = 0.318$; $p < 0.01$) and perceived risk ($\beta = -0.073$; $p < 0.1$) significantly influence respondents' behavioral intentions to use mobile payment, which confirms hypotheses H1, H2, H4, H6, H7, H8 and H9. Other research hypotheses related to the first regression model are rejected, because they result in a statistically insignificant influence of the independent variables on the dependent variable.

The results of the second regression model reveal a statistically significant negative relationship between perceived trust and perceived risk in the context of mobile payment usage ($\beta = -0.437$; $p < 0.01$), thereby supporting hypothesis H9a. In other words, increased trust among users contributes to a reduction in perceived risk associated with mobile payment systems. The model explains 19.1% of the variance in perceived risk, as indicated by the coefficient of determination ($R^2 = 0.191$).

Based on the analysis of the first regression model, solely significant statistical influences of the UTAUT2 model factors on the behavioral intention to use mobile payment meet the condition of having a significant influence on the use of mobile payment in the third regression model as well. Based on the results in Table 4, it can be concluded that the coefficient of determination is 0.455, which means that 45.5% of the variability of the final use of mobile payment is described by the given regression model. In the third regression model, user habit ($\beta = 0.364$; $p < 0.01$) has the strongest, statistically significant, influence on the use of mobile payments in Serbia, followed by behavioral intentions ($\beta = 0.307$; $p < 0.01$) and finally facilitating conditions ($\beta = 0.119$; $p < 0.1$) with the weakest influence. The results of this research confirm research hypotheses H4a, H7a and H10.

Table 4 Testing of research hypotheses

	Hypotheses	*β*	*t*	*p*	*VIF*	R^2
H1	PE > BI	.274	4.936	.000	2.511	
H2	EE > BI	-.176	-3.152	.002	2.557	
H3	SI > BI	-.007	-176	.861	1.389	
H4	FC > BI	.353	7.120	.000	2.004	
H5	HM > BI	.006	0.106	.915	2.791	.720
H6	PV > BI	-.094	-2.112	.036	1.617	
H7	H > BI	.279	4.966	.000	2.586	
H8	PT > BI	.318	4.779	.000	3.620	
H9	PR > BI	-.073	-1.769	.078	1.372	
H9a	PT > PR	-.437	-7.480	.000	1.000	.191
H4a	FC > UB	.119	1.956	.052	1.598	
H7a	H > UB	.364	5.605	.000	1.820	.455
H10	BI > UB	.307	3.963	.000	2.593	

Source: the authors

4. Discussion

In this research, the basic theoretical model for understanding and analyzing the acceptance and use of mobile payment in Central Serbia is the UTAUT2 model. The proposed research model integrates seven primary factors (performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value and habits) with two additional factors (perceived trust and perceived risk), through the investigation of thirteen different hypotheses. The extended research model is a response to the observed research gap, according to which this research tries to remove the observed gap and conduct research with an extended model, i.e. introduce variables that describe the trust and risk of consumers when using different mobile payment systems.

The findings suggest that among all examined factors, facilitating conditions have the most pronounced effect on behavioral intention to adopt mobile payment in Central Serbia, while perceived trust, habit, performance expectancy, effort expectancy, price value and perceived risk follow it in terms of intensity of influence. Factors such as social influence and hedonic motivations do not have a statistically significant impact on the behavioral intention to use mobile payment. This lack of statistical significance may be attributed to the prevailing payment culture and demographic composition of the sample in Central Serbia. In contexts where mobile payments are still in the early stages of mass adoption, hedonic elements and peer influence may be less compelling compared to factors such as trust, convenience, and security (Khatimah et al., 2024; Samudera et al., 2024). Social influence, in particular, often becomes significant only when the technology reaches a critical mass of adoption, enabling peer recommendations and societal expectations to play a stronger role (Shaw & Sergueeva, 2019). In developing markets, however, the decision to adopt mobile payment systems tends to be more individualized and utilitarian rather than socially driven (Gupta et al., 2019). Similarly, the role of hedonic motivation might have been muted in this study due to the limited novelty or entertainment value that users associate with mobile payments. Studies conducted in mature markets also suggest that enjoyment does not necessarily translate into adoption unless combined with perceived value and usefulness (Slade et al., 2015; Upadhyay et al., 2022). Thus, the insignificant findings related to these constructs could reflect the current stage of digital payment ecosystem development in Central Serbia, where instrumental benefits outweigh experiential or social drivers. Several previous research studies (Morosan and DeFranco, 2016; Gupta et al., 2019; Patil et al., 2020) confirm the significant influence of facilitating conditions on the behavioral intention to use technology in the mobile payment domain as well as on the final use of mobile payments (Zhou et al., 2010). In contrast, authors such as Slade et al. (2015), Hussein et al. (2018) and Lee et al. (2019) identify a negative impact of facilitating conditions on the behavioral intention

to use mobile payment. Therefore, such research results indicate that the availability of infrastructure and support to consumers affects behavioral intention of those consumers to use mobile payment. The majority of survey participants reported owning up-to-date digital devices, including modern smartphones, laptops, and mobile payment applications. Factors such as the convenience of using mobile phones at any time, their user-friendly user interface and the presence of social networks on mobile phones develop consumers' habit to make their payments through mobile phones (Gupta et al., 2019). Based on the research results, consumer habits predict their behavioral intention to use mobile payment and final use of mobile payment, which corresponds to the conclusions reached by Tang et al. (2014) and Hussain et al. (2018). Performance expectancy with a positive result implies that consumers feel safe, knowledgeable, informed, which implies higher productivity and quick transactions of those users after using a mobile payment system. The positive performance expectancy is consistent with previous research by numerous authors who analyzed the adoption and use of mobile payments around the world (Hongxia et al., 2011; Yan & Yang, 2015; de Sena Abrahão et al., 2016; Widyanto et al., 2021; Upadhyay et al., 2022).

Based on previous research, perceived trust and risk are significant factors of consumers' behavioral intention to use mobile payment in Central Serbia. It is assumed that the more trust consumers build in a mobile payment system, the more likely they are to continue using it. As for risk, consumers in Central Serbia believe that risk significantly predicts their behavioral intention to use mobile payment, while consumer trust reduces their perceived risk, on the basis of which it can be concluded that there is a significant direct relationship between perceived risk and behavioral intention to use mobile payment, but also that there is an indirect connection. Slade et al. (2015) reach similar results and find that perceived trust has a statistically significant impact on both perceived trust and respondents' behavioral intention to use mobile payment systems. On the other hand, Widyanto et al. (2021) find that in Indonesia there is no direct relationship between perceived risk and consumer behavioral intention to use mobile payment, but there is an indirect relationship through perceived trust that significantly affects both perceived risk and behavioral intention to use mobile payment systems. Effort expectancy significantly affects behavioral intention to use mobile payment, which can be linked to the fact that modern mobile phones are more and more practical and that problems related to screen size, Internet speed, RAM memory size, etc. have been eliminated. Some authors also find that effort expectancy affects behavioral intention to use mobile payment (Abrahão et al., 2016; Gupta et al., 2019; Shin & Lee, 2021). Finally, price value achieves a statistical impact on consumer's intention to use mobile payment in Central Serbia, which is in line with other studies such as Chong et al. (2013), Oliveira et al. (2016) and Bommer et al. (2022). Mobile payment applications work for free, as they allow consumers to pay solely for the price of the desired product, but each mobile payment transaction requires a commission for the bank if it is a *Mastercard*, *Visa* or *American Express* digitized payment card.

According to the results, hedonic motivation and social influence did not prove to be predictive factors of consumers' behavioral intention to accept and use mobile payment systems. If there is an option for consumers to receive certain rewards for using the mobile payment system, only then is it possible to meet the expectations of reference persons, because social influence is a voluntary, not an obligatory activity (Shaw & Sergueeva, 2019; Gupta et al., 2019). Upadhyay et al. (2022) find that social influence exerts a non-significant influence on behavioral intentions to use mobile payments, due to the COVID-19 pandemic and the fundamental need to initiate contactless transactions. When it comes to hedonic motivation, the results show that the users were satisfied, but that they did not enjoy nor were excited about using the mobile payment system. If the majority of the sample consisted of young people aged 18-24, it is assumed that hedonic motivation would be at a much higher level. Authors such as Koenig-Lewis et al. (2015), Agrebi and Jallais (2015) point out that perceived pleasure or hedonic motivation does not have a statistically significant impact on the behavioral intention to use mobile payment. When it comes to the consumers' intention to use mobile payment in Central Serbia, the research shows that these same intentions have a statistically significant effect on the use behavior regarding mobile payment as in Escobar-Rodrguez et al. (2014), Patil et al. (2020), Shin & Lee (2021), Bailey et al. (2022), Upadhyay et al. (2022). Consumers in Serbia are used to using cash as a means of

payment and it is assumed that consumers who express a strong intention to use mobile payment would very likely use such services.

Conclusion

The research was conducted with the main goal of examining which mobile payment determinants have an impact on consumers' behavioral intentions in Serbia to use mobile payment systems, as well as on their final use behavior. In the research, the expanded UTAUT2 model was used as a starting model, to identify consumer behavioral intentions regarding different types of technological innovations in a certain geographical area. Based on that model, the influence of performance expectancy, effort expectancy, facilitating conditions, social influence, habits, price value, hedonic motivation and additional variables such as perceived trust and risk on consumers' behavioral intentions to use mobile payment systems was observed, as well as the influence of those intentions, facilitating conditions and habits on use behavior. The research results reveal that facilitating conditions represent the strongest indicator of the behavioral intention to adopt mobile payment in the Republic of Serbia, while the weakest predictor of the intention is perceived risk.

This research fills a research gap by proposing an extended UTAUT2 model with additional factors, i.e. perceived trust and risk. The scientific contribution of the conducted research is reflected in the expansion of existing knowledge about the influence of the determinants of mobile payment on behavioral intentions, as well as on the use behavior regarding mobile payment systems in transition countries. Also, independently of analyzing consumers' intentions towards using mobile payment systems, the study additionally analyzed the impact of respondents' perceived trust on their perceived risk toward using specific systems. A key contribution of this study lies in its examination of the relationship between consumers' behavioral intention and their actual use of mobile payment systems, offering a more in-depth perspective on the adoption process. As such, the paper presents a comprehensive view of the critical factors influencing mobile payment adoption and usage.

Mass adoption of mobile payment systems is of crucial importance for providers and innovators of mobile payment systems. This paper has important implications for providers, local banks and inventors of mobile payment systems that are intensively trying to launch their products on the markets of developing countries, in this case a country in transition. First, in order to effectively promote the mobile payment service, providers and local banks should create co-branded advertising messages emphasizing the basic benefits that can be realized from the initial and each subsequent use of this service. Promotional messages should be focused on two target consumer groups, those who favor paying in cash in financial institutions where cost benefits stand out and those who prefer conducting transactions at a distance, in order to retain them and additionally convince them that it is the best option. Second, providers and all future creators of mobile payment systems should pay attention to the security factors that consumers face when using a particular system, as well as the protection of personal data entered when accessing the mobile payment application itself. Some of the proposals refer to the most modern and innovative security methods, which are used in mobile technology to authorize access to various applications, such as Advanced Face Recognition, which would record the face during the use of the mobile payment system, as well as defining a fixed amount that can be used for mobile payment within one day. In conservative countries dominated by a high degree of risk towards the adoption of innovations such as mobile payment, it is necessary to focus on minimizing fear and risk. Third, based on the results of social influence on consumers' intentions to use mobile payment, it is concluded that providers of various mobile payment systems and local banks should make the systems more popular among young people, specifically by integrating high-tech and modern add-ons and functions into the system structure, which would be interesting to young people and urge them to start using the system. Fourth, in order to raise citizens' awareness of the usefulness of mobile payment systems, it is necessary for commercial banks, together with providers, to develop promotional campaigns about a new and practical method of payment, which is free. Fifth, the provider's user support in the form of live chat and video tutorials in the application would significantly facilitate the use of mobile payment systems.

As with all empirical studies, this research has several notable limitations. First, the data were collected exclusively within the territory of Central Serbia, which may limit the generalizability of the findings. It is likely that regions such as Vojvodina and the Belgrade metropolitan area exhibit higher levels of behavioral intention toward mobile payment adoption. Future research should therefore aim to include respondents from all regions of Serbia, as well as neighboring Western Balkan countries, to obtain a broader perspective. Second, the relatively modest sample size may influence the stability and generalizability of the statistical results. Upcoming studies should consider expanding the respondent pool, particularly among the 18–24 age group, whose behavioral intentions may differ significantly from those of older participants who dominated the present sample. Third, the current model did not account for the potential moderating effects of demographic variables such as gender and age on the relationships between independent and dependent variables. Examining these moderating influences could provide additional depth and clarity, especially in understanding how user characteristics shape attitudes and behaviors toward mobile payment adoption.

Declarations

Availability of data and materials

To provide a link to the Availability of data and materials, detailing how the data can be accessed or put: The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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References

Ajzen, I.,& Fishbein, M. (1975). A Bayesian analysis of attribution processes. *Psychological Bulletin*, 82(2), 261–277. https://doi.org/10.1037/h0076477

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. U J. Kuhl & J. Beckmann (Ur.), *Action control: From cognition to behavior* (11–39). Springer. https://doi.org/10.1007/978-3-642-69746-3_2

Amoroso, D. L., & Magnier-Watanabe, R. (2012). Building a research model for mobile wallet consumer adoption: The case of mobile Suica in Japan. *Journal of Theoretical and Applied Electronic Commerce Research*, 7(1), 94–110. https://doi.org/10.4067/S0718-18762012000100008

Arvidsson, N. (2014). Consumer attitudes on mobile payment services–results from a proof of concept test. *International Journal of Bank Marketing*, 32(2), 150–170. https://doi.org/10.1108/IJBM-05-2013-0048

Agrebi, S., & Jallais, J. (2015). Explain the intention to use smartphones for mobile shopping. *Journal of Retailing and Consumer Services*, 22, 16–23. https://doi.org/10.1016/j.jretconser.2014.09.003

Akinwande, M. O., Dikko, H. G., & Samson, A. (2015). Variance inflation factor: As a condition for the inclusion of suppressor variable(s) in regression analysis. *Open Journal of Statistics*, 5(7), 754–767. https://doi.org/10.4236/ojs.2015.57075

Alaeddin, O., Rana, A., Zainudin, Z., & Kamarudin, F. (2018). From physical to digital: Investigating consumer behaviour of switching to mobile wallet. *Polish Journal of Management Studies*, 17(2), 18–30. https://doi.org/10.17512/pjms.2018.17.2.02

Alalwan, A. A., Dwivedi, Y. K., Rana, N. P., & Algharabat, R. (2018). Examining factors influencing Jordanian customers' intentions and adoption of internet banking: Extending UTAUT2 with risk. *Journal of Retailing and Consumer Services*, 40, 125–138. https://doi.org/10.1016/j.jretconser.2017.08.026

Al-Saedi, K., Al-Emran, M., Ramayah, T., & Abusham, E. (2020). Developing a general extended UTAUT model for M-payment adoption. *Technology in Society*, 62, 101293. https://doi.org/10.1016/j.techsoc.2020.101293

Al-Saedi, K., & Al-Emran, M. (2021). A systematic review of mobile payment studies from the lens of the UTAUT model. Recent advances in technology acceptance models and theories, 79-106 https://doi.org/10.1007/978-3-030-64987-6_6

Apaua, R., & Lallie, H. S. (2022). Measuring user perceived security of mobile banking applications. *Cybersecurity Journal*. https://doi.org/10.48550/arXiv.2201.03052

Qasim, A., & Abu-Shanab, E. (2016). Drivers of mobile payment acceptance: The impact of network externalities. *Information Systems Frontiers*, *18*(5), 1021-1034. https://doi.org/10.1007/s10796-015-9598-6

Aslam, W., Ham, M., & Arif, I. (2017). Consumer behavioral intentions towards mobile payment services: An empirical analysis in Pakistan. *Market/Tržište*, 29(2), 161–176. https://doi.org/10.22598/mt/2017.29.2.161

Brown, I., Cajee, Z., Davies, D., & Stroebel, S. (2003). Cell phone banking: Predictors of adoption in South Africa - An exploratory study. *International Journal of Information Management*, 23(5), 381–394. https://doi.org/10.1016/S0268-4012(03)00065-3

Brown, S. A., & Venkatesh, V. (2005). Model of adoption of technology in households: A baseline model test and extension incorporating household life cycle. *MIS Quarterly*, 29(3), 399–426. https://www.jstor.org/stable/25148690

Baabdullah, A. M., Alalwan, A. A., Rana, N. P., Kizgin, H., & Patil, P. (2019). Consumer use of mobile banking (M-Banking) in Saudi Arabia: Towards an integrated model. *International Journal of Information Management*, 44, 38–52. https://doi.org/10.1016/j.ijinfomgt.2018.09.002

Berman B & Thelen S (2018), "Planning and implementing an effective omnichannel marketing program". *International Journal of Retail & Distribution Management*, Vol. 46 No. 7 pp. 598–614. https://doi.org/10.1108/IJRDM-08-2016-0131

Baptista, G., & Oliveira, T. (2016). A weight and a meta-analysis on mobile banking acceptance research. *Computers in Human Behavior*, 63, 480–489. https://doi.org/10.1016/j.chb.2016.05.074

Brohi, I., Ali, N., Koondhar, M., Shaikh, I., Katper, N., & Shah, A. (2018). An assessment of proximity technology adoption from a user's perspective. *Sindh University Research Journal (Science Series)*, 50(3D), 220–223.

Baishya, K., & Samalia, H. V. (2020). Extending unified theory of acceptance and use of technology with perceived monetary value for smartphone adoption at the bottom of the pyramid. *International Journal of Information Management*, 51, 102036. https://doi.org/10.1016/j.ijinfomgt.2019.11.004

Bommer, W. H., Rana, S., & Milevoj, E. (2022). A meta-analysis of eWallet adoption using the UTAUT model. *International Journal of Bank Marketing*, 40(7), 1416–1435. https://doi.org/10.1108/IJBM-06-2021-0258

Compeau, D. R., & Higgins, C. A. (1995). Application of social cognitive theory to training for computer skills. *Information Systems Research*, 6(2), 118–143. https://doi.org/10.1287/isre.6.2.118

Cheong, J., Park, M., & Hwang, J. (2004). Mobile payment adoption in Korea: Switching from credit card. *15th Europe Regional Conference of the International Telecommunication Society*, Berlin.

Chen, J. J., & Adams, C. (2005). User acceptance of mobile payments: A theoretical model for mobile payments. *Paper presented at the 5th International Conference on Electronic Business*, Hong Kong, December, 5–9.

Chong, A. Y. L. (2013). A two-staged SEM-neural network approach for understanding and predicting the determinants of m-commerce adoption. *Expert Systems with Applications*, 40(4), 1240–1247. https://doi.org/10.1016/j.eswa.2012.08.067

Cocosila, M., & Trabelsi, H. (2016). An integrated value-risk investigation of contactless mobile payments adoption. *Electronic Commerce Research and Applications*, 20, 159–170. https://doi.org/10.1016/j.elerap.2016.10.006

Chipeva, P., Cruz-Jesus, F., Oliveira, T., & Irani, Z. (2018). Digital divide at individual level: Evidence for Eastern and Western European countries. *Government Information Quarterly*, 35(3), 460–479. https://doi.org/10.1016/j.giq.2018.06.003

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 982–1003. https://doi.org/10.1287/mnsc.35.8.982

Dahlhaus, T., & Welte, A. (2025). Payment habits during COVID-19: Evidence from high-frequency transaction data. *Jahrbücher für Nationalökonomie und Statistik*, *245*(6), 599-621. https://doi.org/10.1515/jbnst-2024-0013

de Sena Abrahão, R., Moriguchi, S. N., & Andrade, D. F. (2016). Intention of adoption of mobile payment: An analysis in the light of the unified theory of acceptance and use of technology (UTAUT). *RAI Revista de Administração e Inovação*, 13(3), 221–230. https://doi.org/10.1016/j.rai.2016.06.003

deLuna, I. R., Liébana-Cabanillas, F., Sánchez-Fernández, J., &Muñoz-Leiva, F. (2019). Mobile payment is not all the same: The adoption of mobile payment systems depending on the technology applied. *Technological Forecasting and Social Change*, 146, 931–944. https://doi.org/10.1016/j.techfore.2018.09.018

Fatima, T., Kashif, S., Kamran, M., & Awan, T. M. (2021). Examining factors influencing adoption of M-payment: Extending UTAUT2 with perceived value. *International Journal of Innovation, Creativity and Change*, 15(8), 276–299.

Goularte, A. D. C., & Zilber, S. N. (2018). The moderating role of cultural factors in the adoption of mobile banking in Brazil. *International Journal of Innovation Science*, 10(3), 394–409. https://doi.org/10.1108/IJIS-11-2017-0119

Gupta, K., & Arora, N. (2020). Investigating consumer intention to accept mobile payment systems through unified theory of acceptance model: An Indian perspective. *South Asian Journal of Business Studies*, 9(1), 88–114. https://doi.org/10.1108/SAJBS-03-2019-0037

Hongxia, P., Xianhao, X., & Weidan, L. (2011). Drivers and barriers in the acceptance of mobile payment in China. In *2011 International Conference on E-business and E-government (ICEE)* (pp. 1–4). IEEE. https://ieeexplore.ieee.org/document/5887081

Hussain, M., Mollik, A. T., Johns, R., & Rahman, M. S. (2018). M-payment adoption for bottom of pyramid segment: An empirical investigation. *International Journal of Bank Marketing*, 37(1), 362–379. https://doi.org/10.1108/IJBM-01-2018-0013

Khatimah, H., Susanto, P., & Abdullah, N. L. (2024). Hedonic motivation and social influence on behavioral intention of e-money: The role of payment habit as a mediator. *South East European Journal of Business, 15*(1), 50–68.

Kim, C., Mirusmonov, M., & Lee, I. (2010). An empirical examination of factors influencing the intention to use mobile payment. *Computers in Human Behavior*, 26(3), 310–322. https://doi.org/10.1016/j.chb.2009.10.013

Keramati, A., Taeb, R., Larijani, A. M., & Mojir, N. (2012). A combinative model of behavioural and technical factors affecting 'Mobile'-payment services adoption: An empirical study. *The Service Industries Journal*, 32(9), 1489–1504. https://doi.org/10.1080/02642069.2011.552716

Koenig-Lewis, N., Marquet, M., Palmer, A., & Zhao, A. L. (2015). Enjoyment and social influence: Predicting mobile payment adoption. *The Service Industries Journal*, 35(10), 537–554. https://doi.org/10.1080/02642069.2015.1043278

Kumar, A., Adlakaha, A., & Mukherjee, K. (2018). The effect of perceived security and grievance redressal on continuance intention to use M-wallets in a developing country. *International Journal of Bank Marketing*, 36(7), 1170–1189. https://doi.org/10.1108/IJBM-04-2017-0077

Karsen, M., Chandra, Y. U., & Juwitasary, H. (2019). Technological factors of mobile payment: A systematic literature review. *Procedia Computer Science*, 157, 489–498. https://doi.org/10.1016/j.procs.2019.09.004

Kalinic, Z., Liébana-Cabanillas, F. J., Muñoz-Leiva, F., & Marinković, V. (2019). The moderating impact of gender on the acceptance of peer-to-peer mobile payment systems. *International Journal of Bank Marketing*, 37(1), 161–178. https://doi.org/10.1108/IJBM-01-2019-0012

Lee, C-P., Choi, H. & Warkentin, M. (2004). The role of technological and social factors on the adoption of mobile payment technologies. *Proceedings of the 10th Americas Conference on Information Systems*, 6-8 th August, New York, 2781-2786.

Lai, I. K., & Lai, D. C. (2010). Negative user adoption behaviors of mobile commerce: An empirical study from Chinese college students. In *2010 8th International Conference on Supply Chain Management and Information* (pp. 1–6). IEEE. https://ieeexplore.ieee.org/xpl/conhome/5676675/proceeding

Lu, Y., Yang, S., Chau, P. Y., & Cao, Y. (2011). Dynamics between the trust transfer process and intention to use mobile payment services: A cross-environment perspective. *Information & Management*, 48(8), 393–403. https://doi.org/10.1016/j.im.2011.09.006

Lee, J. M., Lee, B., & Rha, J. Y. (2019). Determinants of mobile payment usage and the moderating effect of gender: Extending the UTAUT model with privacy risk. *International Journal of Electronic Commerce Studies*, 10(1), 43–64. https://doi.org/10.7903/ijecs.1644

Min, Q., Ji, S., & Qu, G. (2008). Mobile commerce user acceptance study in China: A revised UTAUT model. *Tsinghua Science and Technology*, 13(3), 257–264. https://doi.org/10.1016/S1007-0214(08)70042-7

Musa, A., Khan, H. U., & AlShare, K. A. (2015). Factors influence consumers' adoption of mobile payment devices in Qatar. *International Journal of Mobile Communications*, 13(6), 670–689. https://doi.org/10.1504/IJMC.2015.072100

Madan, K., & Yadav, R. (2016). Behavioural intention to adopt mobile wallet: A developing country perspective. *Journal of Indian Business Research*, 8(3), 227–244. https://doi.org/10.1108/JIBR-10-2015-0112

Malaquias, R. F., & Hwang, Y. (2016). An empirical study on trust in mobile banking: A developing country perspective. *Computers in Human Behavior*, 54, 453–461. https://doi.org/10.1016/j.chb.2015.08.039

Morosan, C., & DeFranco, A. (2016). It's about time: Revisiting UTAUT2 to examine consumers' intentions to use NFC mobile payments in hotels. *International Journal of Hospitality Management*, 53, 17–29. https://doi.org/10.1016/j.ijhm.2015.11.003

Marinkovic, V., & Kalinic, Z. (2017). Antecedents of customer satisfaction in mobile commerce: Exploring the moderating effect of customization. *Online Information Review*, 41(2), 138–154. https://doi.org/10.1108/OIR-11-2015-0364

Manaf, N., & Ariyanti, M. (2017). Exploring key factors on technology acceptance of mobile payment users in Indonesia using modified unified theory of acceptance and use of technology (UTAUT) model: ABC easy tap. *International Journal of Management and Applied Science*, 3(1), 40–44.

Marinkovic, V., Djorđevic, A., & Kalinic, Z. (2020). The moderating effects of gender on customer satisfaction and continuance intention in mobile commerce: A UTAUT-based perspective. *Technology Analysis & Strategic Management*, 32(3), 306–318. https://doi.org/10.1080/09537325.2019.1655537

Neto, F. L. A., & de Figueiredo, J. C. B. (2022). Effects of age and income moderation on adoption of mobile payments in Brazil. *Innovation & Management Review*, (ahead-of-print). https://doi.org/10.1108/inmr-06-2021-0109

Oliveira, T., Faria, M., Thomas, M. A., & Popovič, A. (2014). Extending the understanding of mobile banking adoption: When UTAUT meets TTF and ITM. *International Journal of Information Management*, 34(5), 689–703. https://doi.org/10.1016/j.ijinfomgt.2014.06.005

Oliveira, T., Thomas, M., Baptista, G., & Campos, F. (2016). Mobile payment: Understanding the determinants of customer adoption and intention to recommend the technology. *Computers in Human Behavior*, 61, 404–414. https://doi.org/10.1016/j.chb.2016.03.030

Peter, J. P., & Tarpey, L. X. (1975). A comparative analysis of three consumer decision strategies. *Journal of Consumer Research*, 2(1), 29–37. https://doi.org/10.1086/208613

Peng, H., Xu, X., & Liu, W. (2011). Drivers and barriers in the acceptance of mobile payment in China. In *2011 International Conference on E-Business and E-Government* (pp. 1–4). IEEE. https://doi.org/10.1109/ICEBEG.2011.5887081

Patil, P., Tamilmani, K., Rana, N. P., & Raghavan, V. (2020). Understanding consumer adoption of mobile payment in India: Extending Meta-UTAUT model with personal innovativeness, anxiety, trust, and grievance redressal. *International Journal of Information Management*, 54, 102144. https://doi.org/10.1016/j.ijinfomgt.2020.102144

Petrović, M., & Sakal, M. (2024). Consumerisation of IT – intersection of development streams of business and personal IT. *Strategic Management, 29*(1), 3–10. https://doi.org/10.5937/StraMan2400002P

Qasim, H., & Abu-Shanab, E. (2016). Drivers of mobile payment acceptance: The impact of network externalities. *Information Systems Frontiers*, 18(5), 1021–1034. https://doi.org/10.1007/s10796-015-9576-6

Robinson, P. B., Stimpson, D. V., Huefner, J. C., & Hunt, H. K. (1991). An attitude approach to the prediction of entrepreneurship. *Entrepreneurship Theory and Practice*, 15(4), 13–32. https://doi.org/10.1177/104225879101500405

Rogers, E. M. (1995). *Diffusion of innovations* (4th ed.). Free Press.

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25(1), 54–67. https://doi.org/10.1006/ceps.1999.1020

Riquelme, H. E., & Rios, R. E. (2010). The moderating effect of gender in the adoption of mobile banking. *International Journal of Bank Marketing*, 28(5), 328–341. https://doi.org/10.1108/02652321011064872

Repa, V. (2019). Deriving key performance indicators from business process model. U M. Pańkowska & K. Sandkuhl (Ur.), *Perspectives in business informatics research. BIR 2019. Lecture notes in business information processing* (148–162). Springer. https://doi.org/10.1007/978-3-030-31143-8_11

Samudera, M. S., Lestari, E. D., & Kurniasari, F. (2024). Analysis of the effect of effort expectancy, social influence, hedonic motivation, price value, habit, and flow on MMORPG intention to play. *Environment-Behaviour Proceedings Journal, 9*(SI19), 67–72. https://doi.org/10.21834/e-bpj.v9iSI19.5770

Saravanos, A., Zervoudakis, S., & Zheng, D. (2022). Extending the technology acceptance model 3 to incorporate the phenomenon of warm-glow. *Information*, *13*(9), 429.https://doi.org/10.3390/info13090429

Saini, L., & Khasa, S. (2023). Behavioural intention to use mobile payments in the light of the UTAUT2 model. *Eduzone: International Peer Reviewed/Refereed Multidisciplinary Journal*, *12*(1), 219-230. https://doi.org/10.22271/27084515

Shin, D. H. (2009). Towards an understanding of the consumer acceptance of mobile wallet. *Computers in Human Behavior*, 25(6), 1343–1354. https://doi.org/10.1016/j.chb.2009.06.001

Schierz, P. G., Schilke, O., & Wirtz, B. W. (2010). Understanding consumer acceptance of mobile payment services: An empirical analysis. *Electronic Commerce Research and Applications*, 9(3), 209–216. https://doi.org/10.1016/j.elerap.2009.07.005

Sripalawat, J., Thongmak, M., & Ngramyarn, A. (2011). M-banking in metropolitan Bangkok and a comparison with other countries. *Journal of Computer Information Systems*, 51(3), 67–76.

Smitha, K. K., Thomas, T., & Chitharanjan, K. (2012). Cloud based e-governance system: A survey. *Procedia Engineering*, 38, 3816–3823. https://doi.org/10.1016/j.proeng.2012.06.437

Slade, E. L., Williams, M. D., & Dwivedi, Y. K. (2013). Mobile payment adoption: Classification and review of the extant literature. *The Marketing Review*, 13(2), 167–190. https://doi.org/10.1362/146934713X13699019904687

Slade, E. L., Dwivedi, Y. K., Piercy, N. C., & Williams, M. D. (2015). Modeling consumers' adoption intentions of remote mobile payments in the United Kingdom: Extending UTAUT with innovativeness, risk, and trust. *Psychology & Marketing*, 32(8), 860–873. https://doi.org/10.1002/mar.20823

Sarfaraz, J. (2017). Unified theory of acceptance and use of technology (UTAUT) model-mobile banking. *Journal of Internet Banking and Commerce*, 22(3), 1–20.

Savic, J., & Pesterac, A. (2019). Antecedents of mobile banking: UTAUT model. *The European Journal of Applied Economics*, 16(1), 20–29. https://doi.org/10.5937/EJAE15-19381

Shaw, N., & Sergueeva, K. (2019). The non-monetary benefits of mobile commerce: Extending UTAUT2 with perceived value. *International Journal of Information Management*, 45, 44–55. https://doi.org/10.1016/j.ijinfomgt.2018.10.024

Sivathanu, B. (2019). Adoption of digital payment systems in the era of demonetization in India. *Journal of Science and Technology Policy Management*, 10(1), 143–171. https://doi.org/10.1108/JSTPM-07-2017-0033

Souiden, N., Ladhari, R., & Chaouali, W. (2020). Mobile banking adoption: A systematic review. *International Journal of Bank Marketing*, 38(2), 336–362. https://doi.org/10.1108/IJBM-04-2020-0182

Susanto, P., Hoque, M. E., Hashim, N. M. H. N., Shah, N. U., & Alam, M. N. A. (2020). Moderating effects of perceived risk on the determinants–outcome nexus of e-money behaviour. *International Journal of Emerging Markets*, 17(3), 715–739. https://doi.org/10.1108/IJOEM-05-2019-0382

Shin, S., & Lee, W. J. (2021). Factors affecting user acceptance for NFC mobile wallets in the US and Korea. *Innovation & Management Review*, 18(1), 82–97. https://doi.org/10.1108/INMR-02-2020-0018

Suo, W.-J., Goi, C.-L., Goi, M.-T., & Sim, A. K. S. (2021). Factors influencing behavioural intention to adopt the QR-Code payment. *International Journal of Asian Business and Information Management*, 13(2), 1–22. https://doi.org/10.4018/IJABIM.20220701.oa8

Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research*, 6(2), 144–176. https://doi.org/10.1287/isre.6.2.144

Tsai, H. Y. S., & LaRose, R. (2015). Broadband Internet adoption and utilization in the inner city: A comparison of competing theories. *Computers in Human Behavior*, 51, 344–355. https://doi.org/10.1016/j.chb.2015.04.022

Tan, E., & Lau, J. L. (2016). Behavioural intention to adopt mobile banking among the millennial generation. *Young Consumers*, 17(1), 18–31. https://doi.org/10.1108/YC-07-2015-00537

Tak, P., & Panwar, S. (2017). Using UTAUT 2 model to predict mobile app based shopping: Evidences from India. *Journal of Indian Business Research*, 9(3), 248–264. https://doi.org/10.1108/JIBR-11-2016-0132

Upadhyay, D., Tiwari, P., Mohd, N., & Pant, B. (2022, April). Capacity enhancement for cellular system using 5G technology, mmWave and higher order sectorization. In *2022 IEEE 11th International Conference on Communication Systems and Network Technologies (CSNT)* (pp. 422-427). IEEE. https://doi.org/10.1109/CSNT54456.2022.9787668

Wu, Z., & Liu, Y. (2023). Exploring country differences in the adoption of mobile payment service: the surprising robustness of the UTAUT2 model. *International Journal of Bank Marketing*, *41*(2), 237-268. https://doi.org/10.1108/IJBM-02-2022-0052

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