

# MODELING MOBILE PAYMENT ACCEPTANCE AMONG WORKING-AGE USERS IN THE EMERGING MARKET

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## Abstract

**How to cite this paper:** Abdullah, N. J., Othman, I. W., & Tajul Urus, S. (2024). Modeling mobile payment acceptance among working-age users in the emerging market. *Corporate & Business Strategy Review*, 5(1), 137–147.  
<https://doi.org/10.22495/cbsrv5i1art14>

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**ISSN Online:** 2708-4965

**ISSN Print:** 2708-9924

**Received:** 13.07.2023

**Accepted:** 23.01.2024

**JEL Classification:** L15, L81, L86, O31, O33

**DOI:** 10.22495/cbsrv5i1art14

Mobile payments are poised to become the predominant method of transaction as we progress towards a society with reduced reliance on cash. Despite the rapid growth of mobile payments, not everyone is willing to accept them due to their perception of a lack of security and confidence (Aboobucker & Bao, 2018). This study aims to examine the factors influencing the acceptance of mobile payment among working-age individuals in Malaysia. Data was collected through questionnaires, generating a 49 percent response rate. Descriptive, univariate, and multivariate analyses were performed to analyze the data. Based on the underpinning of the technology acceptance model (TAM) the study discovers that perceived ease of use, personal innovativeness, and behavioral intention have a significant positive relationship with working-age acceptance of mobile payment. In contrast, perceived risk and social influence demonstrated an insignificant effect on working-age acceptance of mobile payment. Understanding these factors may enable service providers to allocate resources effectively and create a sustainable mobile payment ecosystem in the country (Moghavvemi et al., 2021). The study further holds significance for both managers and policymakers in their efforts to harness the potential of mobile payment services, in line with Bank Negara's objective in transitioning towards a cashless society.

**Keywords:** Mobile Payment, Acceptance, Technology Acceptance Model, Working-Age Users, Malaysia

**Authors' individual contribution:** Conceptualization — N.J.A.; Methodology — N.J.A. and I.W.O.; Writing — Original Draft — N.J.A.; Writing — Review & Editing — I.W.O. and S.T.U.; Supervision — N.J.A. and I.W.O.; Project Administration — S.T.U.; Funding Acquisition — I.W.O.

**Declaration of conflicting interests:** The Authors declare that there is no conflict of interest.

**Acknowledgements:** The Authors are grateful for the financial support and administrative assistance provided by the Faculty of Accountancy, Universiti Teknologi MARA (UiTM/Selangor Branch), and the Research Management Centre (RMC) under a DDF grant (Faculty Internal Fund) 600-TNCPI 5/3/DDF (004/2023).

## 1. INTRODUCTION

The rapid technological advancements have brought about a revolution in modern lifestyles, offering people new and convenient ways of accessing information, communicating, and performing daily activities. The increased use of smart technology has also enhanced the customer life cycle, leading to more interactions between customers and businesses (Marinova et al., 2017). One area of great interest is the increasing popularity of mobile payment technologies worldwide. The use of mobile payment technology has witnessed a significant rise in recent years (Liébana-Cabanillas et al., 2020). However, despite the potential for further growth, research on the factors that impact the acceptance of mobile payment technologies in emerging markets received a lack of attention.

Mobile payments refer to the act of finalizing payments via mobile communication devices, such as smartphones or personal digital assistants (PDAs), and validating and authorizing the exchange of the economic worth of goods and services through these mobile devices (Dahlberg et al., 2008). Mobile payment services provide convenience for users, allowing them to buy and pay for items using their smartphones. Customers' approach to making payments has completely transformed with mobile payments, eradicating the need to carry large sums of cash and effectively reducing the risk of loss or theft. In addition to providing a secure payment option, mobile payment systems also save customers valuable time, provide a hassle-free experience, and the ability to track financial records easily (Digital News Asia, 2022). According to the Visa Consumer Payment Attitudes Study (2021), mobile payments such as mobile wallets are preferred over cards usage due to the speed of transactions (67%), convenience (66%), and physical safety of consumers (60%). Based on the projection by Statista (2023), mobile transactions of goods and services will reach a record high of USD3.35 trillion by the end of 2023. The gradual rise of mobile transactions over the last few years suggests that it has the potential to become customers' preferred payment method. Samsung Pay and Apple Pay revolutionary mobile payment services by major corporate giants are a testament to this promising trend.

Amid the COVID-19 pandemic, mobile payments have become a preferred option due to the promotion of contactless transactions (Zhao & Bacao, 2021). According to Kaur et al. (2020), early adopters are the main users of mobile payments, while other segments of society have yet to widely embrace the technology. Despite the ease of internet connectivity and mobile device usage, only 39% of global smartphone users own a mobile wallet (Rolfe, 2018). It was found that the adoption of mobile payment services in retail settings is still relatively low, despite their availability. In Malaysia, a similar phenomenon can be observed where mobile payments have not gained widespread acceptance, with credit cards and cash remaining the most used payment methods. In the past decades, Malaysia has taken significant steps to upgrade its payment services infrastructure and has introduced a mobile payment system to enhance the country's banking services and financial sector. While there has been an increase in the adoption of electronic and mobile payment by customers in Malaysia, the country

continues to be a predominantly cash-based society, with around 80% of transactions still conducted in cash, while 52 million credit and debit cards are in circulation in its market (Moghavvemi et al., 2021). The adoption rate for mobile wallets in Malaysia is quite low (Yong & Qiang, 2022), with Nielsen's Malaysia Payment Landscape 2018 report indicating that only 8% of Malaysians use them for payment. Despite Bank Negara Malaysia's (BNM) goal of establishing a cashless society with mobile-based payments at its core by 2020, this objective has yet to be realized (Nielsen Malaysia, 2018). As investment in mobile payment systems continues to grow, it is crucial to encourage users to embrace this payment method. Drawing upon this phenomenon, the research question that arises is:

*RQ: Do the key factors of the technology acceptance model (TAM) affect the acceptance of mobile payment among working-age individuals in Malaysia?*

Unlike previous literature which relied on classical models of technology adoption, such as the theory of reasoned action (TRA), TAM, and unified theory of acceptance and use of technology (UTAUT), this study proposes a holistic model that integrates the main variables reviewed and applies it in an emerging market like Malaysia. By doing so, it offers a new perspective on the factors influencing the acceptance of mobile payment in developing countries with a scarcity of comparable studies, providing a valuable point of comparison with developed markets. Whilst considerable emphasis was also given in prior studies on the perspectives of the broad group of mobile phone users, this study differs by examining the potential significance of working-age individuals in accepting mobile payment. The current population in Malaysia is predominantly made up of individuals in the working-age category. According to statistics, the percentage of working-age individuals stands at 69.5% in 2022. They are the primary age group that makes online purchases at least once a month and are also the top digital spenders in the country (Ernst & Young, 2016). However, despite this demographic's potential, mobile payment adoption in Malaysia lags behind. Understanding reasons for acceptance among working-age users would benefit through strategic designs that overcome existing acceptance barriers.

In answering the research question, this study aims to examine the factors influencing the acceptance of mobile payment among working-age individuals in Malaysia. Data was collected through questionnaires, generating a 49% response rate. Descriptive, univariate, and multivariate analyses were performed to analyze the data. Based on the underpinning of the TAM the study discovers that perceived ease of use, personal innovativeness, and behavioral intention have a significant positive relationship with working-age acceptance of mobile payment. In contrast, perceived risk and social influence demonstrated an insignificant effect on working-age acceptance of mobile payment.

This study provides valuable implications for practitioners, researchers, and mobile payment providers interested in understanding users' perceptions and acceptance of mobile payment services in emerging markets. Specifically, the study contributes to existing literature on mobile payment services by investigating the relationships between key constructs such as perceived risk, perceived ease of use, social influence, personal innovativeness, and

behavioral intention, and their impact on acceptance of mobile payment services in Malaysia. Understanding these factors may enable service providers to allocate resources effectively and create a sustainable mobile payment ecosystem in the country. The study further holds significance for both managers and policymakers in their efforts to harness the potential of mobile payment services, in line with Bank Negara's objective in transitioning towards a cashless society.

The rest of this paper is structured as follows. Section 2 reviews the relevant literature to develop hypotheses regarding perceived ease of use, perceived risk, social influence, personal innovativeness, and behavioral intention in influencing the acceptance of mobile payment services. Section 3 provides the research methodology that has been used to conduct empirical research on mobile payment acceptance and the factors of the TAM theory. Section 4 presents the results obtained and a discussion regarding the findings. And, lastly, Section 5 offers the conclusion of this study.

## 2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

### 2.1. Mobile payment and users' acceptance

Mobile payments are not as prevalent in Malaysia compared to other Asian countries like China, nevertheless, their usage is steadily increasing. The growing adoption of mobile payment systems in daily life is a significant trend that aligns with Malaysia's efforts to transition into a cashless society, as outlined in the government's Shared Prosperity Vision 2030 (Yin, 2021). To support this objective, the Malaysian Central Bank has issued 49 licenses to platform providers, resulting in a substantial number of mobile banking transactions (2.2 million) and Internet banking transactions (7.59 million) (Bank Negara Malaysia, 2020). The use of cashless payments amidst the COVID-19 pandemic was further stimulated when the Malaysian government took additional measures by allocating RM750 million (USD186 million) to promote the use of mobile payments through various initiatives (Fong, 2020). The increasing acceptance of these platforms indicates a level of technological convergence in the national digital ecosystem, facilitating the successful implementation and commercialization of similar platforms in the country.

The Global Consumer Insight Survey (PricewaterhouseCoopers [PWC], 2019) revealed that several developing countries in Southeast Asia, including Thailand, Vietnam, Indonesia, Philippines, and Malaysia, were among the top ten in terms of mobile payment adoption. Despite having the lowest adoption rate initially, Malaysia experienced a significant year-over-year growth of 17% in 2019 (PWC, 2019). The increasing mobile payment adoption particularly among working-age individuals is mainly due to high mobile penetration rates, evolving customer payment attitudes, and incentives offered by banks. Nizam et al. (2019) further add that the convenience of conducting cashless transactions, security, and cost savings are driving the adoption of mobile payments. These indications of consumers' low but increasing acceptance present an opportunity for this study to explore the factors that influence users' acceptance of mobile payments

in Malaysia. In examining factors determining working-age users' acceptance of mobile payment acceptance, this study applied the TAM by Davis (1989).

The TAM is an influential extension of Fishbein and Ajzen's (1975) theory of reasoned action (TRA), which replaces many of TRA's attitude measures with technology acceptance constructs. TAM is a well-known model in the literature for predicting user behavior towards innovation acceptance and usage of technology, and it allows for the incorporation of additional factors into its basic model when a deeper explanation of acceptance is desired (Hong et al., 2006). This study maintains the fundamental variables of TAM, which include *perceived risk*, *perceived ease of use*, and *behavioral intention*, while also contributing new variables. These new variables, including *social influence* and *personal innovativeness*, are expected to influence the acceptance of mobile payment services. This study would fill the gap by extending the TAM with two previously unexplored factors. This will provide a more comprehensive understanding of the factors influencing the acceptance of mobile payment in Malaysia. Additionally, the study intends to examine the nature and significance of the relationship between these factors, thereby determining which ones play a more significant role in predicting the acceptance of mobile payment systems.

### 2.2. Factors of the technology acceptance model

Perceived ease of use refers to the extent to which individuals anticipate that a particular technology will be simple to navigate (Davis, 1989). When users perceive a system as easy and hassle-free, they are more likely to use it. Additionally, Yang et al. (2023) and Ramayah et al. (2013) highlight that observing others' successful adoption of technology often stimulates users' desire to use it. Nonetheless, certain features such as a small display size and difficulty in entering information using mobile devices may present limitations that make utilizing mobile payment services challenging and laborious.

In a study of 866 Singaporean undergraduates, Yang (2005) found a positive correlation between perceived ease of use and customer adoption of mobile commerce. Past studies (Chandra et al., 2010) consistently discovered that perceived ease of use positively impacts the behavioral intention to utilize mobile payment systems. Albastaki et al. (2022) found that ease of use has a high influence on the e-payment acceptance of customers in the Kingdom of Bahrain. However, Nykvist and Stalfors (2011), reported contrasting results, where perceived ease of use is an insignificant determinant factor of mobile payment acceptance. Despite mixed findings, it is argued that these results are in line with the TAM model which suggests that perceived ease of use plays a critical role in users' acceptance of mobile payment services. Hence, the following hypothesis is posited:

*H1: Perceived ease of use has a significant relationship with users' acceptance of mobile payment.*

Perceived risk, a concept introduced by Bauer (1960), initially focused on two critical factors: uncertainty and negative consequences resulting from a purchasing transaction. Uncertainty pertains to the lack of knowledge consumers have regarding the possible outcomes of a transaction, while negative consequences refer to the possible

drawbacks of the purchasing process. Bauer (1967) further emphasized that any consumer behavior implies a certain level of risk because the outcomes are unknown. Gupta and Kim (2010) defined perceived risk as a consumer's apprehension towards the uncertainty and negative consequences associated with a transaction with a seller.

Perceived risk is the primary factor that influences people's views towards mobile payment services (Widyanto et al., 2022). Cozzarin and Dimitrov (2017) further demonstrated how perceived risk can shape the decision-making process of mobile users. Users may experience feelings of uncertainty and risk when introduced to new technology. Consumer perceptions of risk are often influenced by their emotions of unease or anxiety about their decisions and the potential outcomes. In the case of mobile payments, users may encounter various possible risks, such as uncertainties about the security of cellular connections. Slade et al. (2015) identified possible concerns such as the theft of funds and the exposure of personal information. Moreover, unfamiliarity with the operational differences between various technical products and mobile payment procedures can lead to confusion and increase users' perception of technical risks. Despite this matter, the majority of research studies, as analyzed by Gao et al. (2018) in a recent meta-analysis of 34 studies on mobile payments, have concluded that perceived risk has a negative impact on the intended use and adoption of mobile payment systems. Based on the arguments and past findings, the following hypothesis is formulated:

*H2: Perceived risk has a significant relationship with users' acceptance of mobile payment.*

Previous studies emphasized the crucial role of social influence which significantly impacts the adoption of new technologies (Taheam et al., 2016). Social influence refers to the extent to which individuals believe that those around them, including family members, friends, and colleagues, influence their usage of new technology (Widyanto et al., 2022). Koenig-Lewis et al. (2015) refer to social influence as the advice and feedback provided by reference groups, which aids in alleviating consumers' concerns and uncertainties regarding the adoption of new technologies. Social influence is critical in the acceptance of new technologies, particularly during the diffusion and development phases, due to consumers' lack of knowledge and confidence in new technologies (Patil et al., 2020). Musa et al. (2015) suggest that increased technology use leads to positive societal changes. Mobile users tend to seek opinions from peers and relatives related to mobile payment due to the rise of social media. Past studies (e.g., Yahaya & Ahmad, 2019) revealed social influence to be the most important predictor, whilst others discovered that social influence did not have a significant effect (e.g., Chen et al., 2019). As suggested by the TAM model and supported by previous research, social influence plays a crucial role in users' acceptance of mobile payment. Hence, the study posits the following hypothesis:

*H3: Social influence has a significant relationship with users' acceptance of mobile payment.*

The adoption of new technology is said to stem from personal innovation, which refers to an individual's willingness to explore novel information technology. According to the innovation diffusion theory proposed by Rogers (2003),

individuals who exhibit higher levels of innovativeness tend to be more proactive in seeking information about new ideas, resulting in them becoming early adopters of innovations. A consumer's curiosity in trying out new technology-based services and their receptiveness to fresh ideas underline the significance of innovativeness in determining technology acceptance behaviors (Lu, 2014).

Previous studies have shown that innovativeness was found to be the most significant independent variable in measuring a user's adoption intention, followed by perceived usefulness (e.g., Chao et al., 2013). Studies revealed a significant effect of personal innovativeness on the adoption of mobile learning, with high innovativeness being associated with more openness to learning new things (e.g., Ayub et al., 2017). In the Malaysian context, Ibrahim et al. (2019) discovered that individual innovativeness has a key role in predicting Malaysian customers' inclination to embrace Quick Response (QR) mobile payments. Nevertheless, the findings by Liébana-Cabanillas et al. (2020) reveal that innovativeness has little influence on the intention to use mobile payment services. The modest positive effect of innovativeness may be attributed to the fact that mobile payment is not entirely a new technology; it represents a variation of existing mobile payment services. The inclination to explore the unknown might have a more significant influence. Given the growing trend of mobile payment usage in Malaysia, it is crucial to examine innovativeness as a potential influencing factor. Thus, the impact of personal innovativeness on mobile payment acceptance will be examined and the following hypothesis will be formulated:

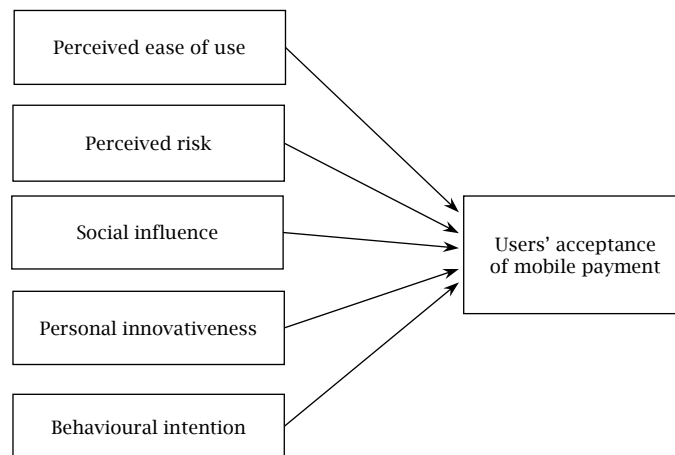
*H4: Personal innovativeness has a significant relationship with users' acceptance of mobile payment.*

Behavioral intention is a crucial indicator when evaluating the use of information technologies and serves as the basis for the TAM model. Intention is commonly used to understand how attitude can influence actual behavior (Huang et al., 2004). Studies further demonstrated that mobile users' positive beliefs about mobile technology are associated with their favorable intentions towards it (Baptista & Oliveira, 2016). Finally, intention to use is established as the primary predictor of consumer's actual use of mobile services (Shin, 2009). There is a well-established relationship between behavioral intention and technology acceptance, as indicated by various studies including Davis et al. (1989). Users who are more receptive to new technologies are more likely to adopt them. A recent study by Jin et al. (2020) further found that behavior plays a significant role in shaping people's intention to accept mobile wallets in Malaysia. Based on past findings, it is posited that:

*H5: Behavioral intention has a significant relationship with users' acceptance of mobile payment.*

In understanding the factors that affect users' acceptance of mobile payment in Malaysia, this study examines five key factors of the TAM. Accordingly, five hypotheses were formulated that focus on key factors including perceived ease of use, perceived risk, social influence, personal innovativeness, and behavioral intention and their impact on users' mobile payment acceptance. The research conceptual framework research for the study is shown in Figure 1 below:

Figure 1. Conceptual framework



### 3. RESEARCH METHODOLOGY

#### 3.1. Sampling and data collection

The population of this research is the working-age individuals in Selangor based on the cluster sampling method. This study specifically targets respondents in Selangor, taking into consideration the significant concentration of individuals within the working age bracket in this region (Jamaludin et al., 2021). Furthermore, the working-age group of users exhibits a substantial contribution to online purchases and is recognized as the country's leading digital spenders. A simple random sampling was then used where every individual had an equal chance to be selected.

Data was collected using structured questionnaires which were distributed online in December 2022 by using a Google form. The hyperlink of the survey form, along with a note explaining the aim of the study was distributed among the target population through diverse social media platforms such as Facebook, Instagram, and WhatsApp. These platforms were chosen due to their widespread usage in Malaysia. The survey link was accessible to the target population for one month, allowing respondents to complete the questionnaire at their convenience by clicking the provided URL. Participation in the survey was voluntary. After collecting data for a month, redundant and flawed responses were removed to ensure the integrity of the dataset. A total of 385 questionnaires were distributed, with 190 usable responses received from various employment sectors, including public and private sectors. This resulted in a response rate of 49%, exceeding the recommended minimum suggested by most researchers (Hair et al., 1998). Research studies may consider alternative methods for conducting the research including a systematic literature review approach to determine key attitudes, behavior, and technological factors that affect the acceptance and adoption of mobile payment. Additionally, in-depth interviews could be conducted with bankers or merchants from the retail industries to gain insight into the motivational drives, barriers, and challenges related to the acceptance and adoption of mobile payment systems.

#### 3.2. Research instrument

The questionnaire used in this study is divided into three sections which are Section A, Section B, and Section C<sup>2</sup>. Section A of the questionnaire was designed to collect demographic information of the respondents including gender, age, education level, employment, job position, income level, and usage frequency of mobile payments services. Section B determines working-age users' acceptance of mobile payment which typically measures the willingness and readiness of individuals to adopt and use mobile payment systems for various transactions and financial activities. Section C consists of five parts that affect users' acceptance of mobile payment, which include perceived ease of use, perceived risk, social influence, personal innovativeness, and behavioral intention.

The questionnaire survey instrument comprised 27 items. Section B comprises seven questions about working-age users' acceptance of mobile payment. Section C comprised four questions about perceived ease of use, four questions about four perceived risks, four questions about social influence, questions about personal innovativeness, and four questions about behavioral intention. A five-point Likert scale was used to measure agreement or disagreement of the subject of each statement ranging from 1 = *strongly disagree*, 2 = *disagree*, 3 = *neither agree nor disagree*, 4 = *agree*, and 5 = *strongly agree*. The respondents were made aware of the objectives of the study and were asked to fill in the survey only if they had heard of or used a mobile payment. The participation was completely voluntary and utmost care was taken while collating and analyzing the data. Based on the completed questionnaires, the data was checked for normality. As multivariate regression is employed for data analysis, assumptions of multicollinearity, homoscedasticity, and linearity are also tested. Table 1 below presents the variable measurements.

<sup>2</sup> A copy of the questionnaire is available upon request.

Table 1. Variable measurements

Variables	Measurement	Authors
<b>Dependent variable</b>		
Users' acceptance of mobile payment	1. Quick accomplishment of tasks. 2. Ease of doing tasks. 3. Pleasure in mobile payment usage. 4. Cost efficiency of using mobile payment. 5. Benefits of mobile payment 6. Reliability of mobile payment systems. 7. Security in mobile payment systems.	Liew (2019)
<b>Independent variables</b>		
Perceived ease of use	1. The ease of learning to operate mobile payment. 2. The clear interaction with a mobile payment system. 3. The ease of use of mobile payment. 4. Interaction flexibility with mobile payment.	Kapoor et al. (2015)
Perceived risk	1. Mobile payment could reveal personal confidential information. 2. Mobile payment systems could shut down when using it. 3. Mobile payment systems could be closed during emergencies. 4. Unauthorized access to security codes used for mobile payments.	Yang et al. (2015)
Social influence	1. Perception of closely connected people that the individual should use mobile payment. 2. Acquainted people using mobile payment systems. 3. Friends' perception of using mobile payment. 4. People with close connections introduce others to using mobile payment.	Koenig-Lewis et al. (2015)
Personal innovativeness	1. The exploration of recent trends in information technology such as mobile payment. 2. Being the early person among peers to experiment with the latest information technology such as mobile payment. 3. Being hesitant to experience new information technologies such as mobile payment. 4. The interest to try new technology.	Patil et al. (2020)
Behavioral intention	1. Intention to use mobile payment services. 2. Mobile payment usage in daily life. 3. Persistency in using mobile payment in the future. 4. Recommending to people the usage of mobile payment.	Liew (2019)

### 3.3. Research model

Hypothesis testing is carried out to test whether the posited relationship outlined in *H1*, *H2*, *H3*, *H4*, and *H5* is true. Multiple linear regression is applied to measure the relationship between the independent variables (*Perceived ease of use*, *Perceived risk*, *Social influence*, *Personal innovativeness*, and *Behavioral*

*intention*) and the dependent variable (*Users' acceptance of mobile payment*). The scale of each item is measured at an interval scale and the multiple regression approach analyzes based on the mean of the summated scales of the items of the dimension. Below is the multiple regression model adopted by the study:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon \quad (1)$$

where,

$Y$  = Users' acceptance of mobile payment.

$\beta_0$  = Constant.

$X_1$  = Perceived ease of use.

$X_2$  = Perceived risk.

$X_3$  = Social influence.

$X_4$  = Personal innovativeness.

$X_5$  = Behavioral intention.

$\varepsilon$  = Error term.

## 4. RESULTS

### 4.1. Demographic profile

Table 2 presents the demographic profile of respondents. The study involved 190 respondents comprised of 37 males (19.5%) and 153 females (80.5%). Respondents were mostly in the age group of 25–34, amounting to 46.8% of the total respondents. This is followed by those in the age group 15–24 (22.1%) and 35–44 (18.4%) with the least aged 55 above (2.7%). Most respondents have a degree qualification (54.2%), followed by those with a Diploma/STPM (23.2%), and the least among those with a PhD (1.1%). Respondents are mainly employed in the private sector (73.2%). For job positions, the majority hold an administrative post (35.3%), whilst management and professional post shows an equal proportion at 31%. In terms of household income, the majority (27.9%) had income levels between RM4,001 and RM5,000.

Table 2. Demographic profile of the respondents

Demographic factors	Items	Frequency	Percentage (%)
Gender	Male	37	19.5
	Female	153	80.5
Age	15-24	42	22.1
	25-34	89	46.8
	35-44	35	18.4
	45-54	19	10.0
	55 above	5	2.7
Level of education	STPM below	17	8.9
	Diploma/STPM	44	23.2
	Degree	103	54.2
	Master	19	10.0
	PhD	2	1.1
	Others	5	2.6
Employment	Private	139	73.2
	Public	43	22.6
	Self Employed	4	2.1
	Others	4	2.1
Job position	Management	60	31.6
	Professional	59	31.1
	Administrative	67	35.3
	Business Owner	4	2.1
Income	< RM2,000	39	20.5
	RM2,000–RM3,000	24	12.6
	RM3,000–RM4,000	30	15.8
	RM4,001–RM5,000	53	27.9
	RM5,001 above	44	23.2
Usage frequency	At least once a day	56	29.5
	At least once a week	96	50.5
	At least once a month	34	17.9
	Almost never	4	2.1

## 4.2. Descriptive analysis

Table 3 shows the descriptive statistics for all variables, with users' acceptance of mobile payment as the dependent variable while other variables are independent variables. The total mean from Table 3 is an average gained from the total responses of the respondents. Overall, the mean for all constructs exceeds 3.0, ranging between 3.06 (PI3)–4.48 (PEU3), which suggests that respondents generally had a neutral view on most of the questionnaire items and many indicate agreement with most of the survey questions. The mode is predominantly at the value of 5, with the least item at the value of 3. This suggests that the majority of items leaned towards the "strongly agree" category. Moreover, the minimal variations in the highest and lowest standard deviations indicate a consistent opinion among working-age individuals.

**Table 3.** Descriptive statistics

Variables	Items	Mean	Std. Dev.	Mode
Perceived ease of use (PEU)	PEU1	4.43	0.743	5
	PEU2	4.41	0.720	5
	PEU3	4.48	0.672	5
	PEU4	4.37	0.735	5
Perceived risk (PR)	PR1	3.31	1.161	3
	PR2	3.64	1.098	4
	PR3	3.63	1.164	4
	PR4	3.59	1.221	5
Social influence (SI)	SI1	3.95	0.964	4
	SI2	4.33	0.770	5
	SI3	4.02	0.973	5
	SI4	3.95	1.015	5
Personal innovativeness (PI)	PI1	4.09	1.012	5
	PI2	3.26	1.223	3
	PI3	3.06	1.298	3
	PI4	3.74	1.091	5
Behavioral intention (BI)	BI1	4.28	0.784	5
	BI2	4.12	0.969	5
	BI3	4.31	0.791	5
	BI4	4.28	0.825	5

The data distribution has a skewness that varied from -0.725 to +0.250, while the kurtosis varied from -0.621 to 0.258. Since both the skewness and kurtosis coefficients fall within the  $\pm 3$  range, it can be concluded that all the data is normally distributed (Kline, 2011). The reliability test results are displayed in Table 4. The variables included in the full test exhibited Cronbach's alpha values ranging from 0.622 to 0.913. All variables achieved a score of more than 0.60 which suggests that they are deemed reliable (Hair et al., 2006).

**Table 4.** Reliability test

Variables	Number of items	Cronbach's alpha
Perceived ease of use (PEU)	4	0.891
Perceived risk (PR)	4	0.700
Social influence (SI)	4	0.776
Personal innovativeness (PI)	4	0.622
Behavioral intention (BI)	4	0.913

## 4.3. Factor analysis

Factor analysis is a statistical method and exploratory tool used by researchers to identify the structure of the underlying factors (variables) of research. Factor analysis allows for reducing a large number of factors to a few primary factors that

contain the variables. The variable structure is contextualized and subjected to reliable tests such as factor analysis to determine whether each variable shares the same construct. As a result, the interrelationship between variables is demonstrated. Kaiser-Meyer-Olkin (KMO) of Sampling Adequacy is used in this study to construct factors and test the validity of the instruments used. Kaiser (1974) also suggests a strict minimum of 0.5, describing values between 0.5 and 0.7 as average, 0.7 and 0.8 as acceptable, 0.8 and 0.9 as outstanding, and values beyond 0.9 as fantastic.

To reduce the number of variables that may be used in this study, the current study employs a data-reduction technique. As a result, factors analysis is used to reduce the variable to a smaller set of underlying factors with a minimal loss of information. The critical value of the loading factor for the rotation matrix in this study is set at 0.4, which means that any score less than 0.4 is not considered important and should be dropped from the analysis. Table 5 below displays that all items were greater than 0.4, indicating that all variables are important.

**Table 5.** Factor analysis

Variables	Items	Factor loading
Users' acceptance of mobile payment (UA)	UA1	0.816
	UA2	0.820
	UA3	0.727
	UA4	0.409
	UA5	0.562
	UA6	0.596
	UA7	0.660
Perceived ease of use (PEU)	PEU1	0.738
	PEU2	0.813
	PEU3	0.794
	PEU4	0.656
Perceived risk (PR)	PR1	0.744
	PR2	0.575
	PR3	0.638
	PR4	0.555
Social influence (SI)	SI1	0.665
	SI2	0.518
	SI3	0.733
	SI4	0.603
Personal innovativeness (PI)	PI1	0.694
	PI2	0.730
	PI3	0.895
	PI4	0.714
Behavioral intention (BI)	BI1	0.764
	BI2	0.752
	BI3	0.773
	BI4	0.755

## 4.4. Correlation analysis

Table 6 presents the correlation matrix among the independent variables and dependent variables. The results indicate that there are no serious multicollinearity problems, as the correlations among the variables are relatively low. The highest correlation is reported at a coefficient of 0.735 between perceived ease of use and behavioral intention, nonetheless, this relationship alone cannot be used to establish causality. The high correlation indicates that consumers who perceive mobile payment to be both convenient and useful, are more likely to have a favorable acceptance towards using the system. Further analysis of the value of VIF for all variables is also shown to be less than 10 which indicates that all the variables are not highly intercorrelated (Field, 2009).

Table 6. Pearson correlation analysis

Variables	UA	PEU	PR	SI	PI	BI
Users' acceptance (UA)	1	0.517**	-0.063	0.330**	0.489**	0.547**
Perceived ease of use (PEU)	0.517**	1	0.028	0.442**	0.565**	0.735**
Perceived risk (PR)	-0.063	0.028	1	0.146*	0.033	-0.060
Social influence (SI)	0.330**	0.442**	0.146*	1	0.251**	0.483**
Personal innovativeness (PI)	0.489**	0.565**	0.033	0.251**	1	0.589**
Behavioral intention (BI)	0.547**	0.735**	-0.060	0.483**	0.589**	1

Note: \*, \*\* Correlation is significant at the 0.05 and 0.01 levels (2-tailed).

#### 4.5. Multivariate regression analysis

Table 7 presents the regression estimates of independent variables on user acceptance of mobile payment. Results demonstrated that the coefficient of PEU is positive and statistically significant ( $\beta = 0.128$ ,  $p < 0.100$ ), indicating that perceived ease of use exhibits a greater tendency to accept the usage of mobile payment. In this case, the null hypothesis for  $H1$  is rejected, suggesting that perceived ease of use significantly and positively impacts the acceptance of mobile payment among working-age users. Consistent with the TAM and the findings by Mun et al. (2017), the ease of use in e-payment systems becomes a crucial factor in mobile payment acceptance, as it signifies the system's ability to be used without complications and deliver the desired outcomes with minimal effort. Moreover, it demonstrates the self-sufficiency that customers seek (Albastaki et al., 2022).

Table 7. Multivariate regression analysis

	Coefficient	Std. Error	t	Sig
Constant	2.396		10.623	
PEU	0.128*	0.065	1.960	0.052
PR	-0.040	0.032	-1.248	0.214
SI	0.058	0.043	1.342	0.181
PI	0.132***	0.043	3.082	0.002
BI	0.139**	0.058	2.402	0.017
R-square	0.606			
N	190			

Note: \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1%, accordingly.

The result further shows that the coefficient for PI is positive and significant ( $\beta = 0.132$ ,  $p < 0.01$ ) showing that personal innovativeness plays a significant role in influencing user acceptance of mobile payment. As a result,  $H4$  is supported, indicating that personal innovativeness significantly influences the acceptance of mobile payment. Based on TAM, consumers' curiosity and receptiveness towards novel technology-driven services, as well as their willingness to embrace new ideas, demonstrate the significance of innovativeness in shaping behaviors related to accepting and adopting technology. Liébana-Cabanillas et al. (2020) further validated that innovativeness plays a role in influencing how users perceive the usefulness of new technology, ultimately impacting their intention to adopt it (Chen et al., 2019).

The coefficient for BI was revealed to be positive and significant ( $\beta = 0.139$ ,  $p < 0.05$ ) showing that behavioral intention plays a significant role in influencing user acceptance of mobile payment. Consequently,  $H5$  is supported. In line with TAM, the result supports the contention that behavioral

intention is an influential factor that determines users' actual behavior (Haritha, 2022), hence the significant impact of behavioral intention on the acceptance of mobile payment.

The result reveals that two hypotheses were not supported. As per Table 7, perceived risk and social influence did not emerge as significant predictors of user acceptance of mobile payment. Social influence is a voluntary action; hence the prospect of meeting other's expectations is only feasible if users are incentivized or rewarded for their behavior (Shaw & Sergueeva, 2019; Albastaki et al., 2022).

Findings also show that working-age users do not consider potential risks associated with mobile payment when determining their acceptance and willingness to adopt it. This aligns with the descriptive results that show a relatively low mean score of 3.54 for the perceived risk. (Aboobucker & Bao, 2018; Widyanto et al., 2022). Mobile payment systems can be operated effectively without compromising the safety and accuracy of transactions. Unlike carrying a significant amount of cash, which is both inconvenient and unsafe, mobile payment systems facilitate a streamlined transaction process that involves fewer steps and provides enhanced security when compared to debit or credit card transactions.

The  $R^2$ , being the coefficient of determination, for the whole regression model had a value of 0.606. This indicates that there is a 60.6% variation in working-age acceptance that can be explained by the five independent variables. Alternatively, 39.4% of the findings in this study were unexplained.

Results of the regression analysis documented that perceived ease of use, personal innovativeness, and behavioral intention have significant effects on the acceptance of mobile payments among working-age users in Malaysia. Consistent with prior studies, perceived ease of use significantly determines user acceptance of the mobile payment system. The more user-friendly the product is, the greater its effectiveness and the higher the chances that consumers will accept and readily adopt it (Haritha, 2022). Personal innovativeness is also a vital determinant of user acceptance of mobile payments (Chen et al., 2019). Park et al. (2016) claimed that individuals who exhibit a high degree of innovation tend to cluster together as innovators or early adopters. This is because they possess a strong curiosity for novel information services and are open to the challenges associated with adopting new technological systems. Behavioral intention also significantly influences user acceptance of mobile payments. It indicates that positive behavioral intention leads to positive use behavior toward mobile payment.



## 6. CONCLUSION

The last several decades have witnessed a tremendous advancement and globalization of technology across all spheres of life, including commerce and financial services, leading to the emergence of mobile payment technology. Since its introduction, mobile payment has significantly enhanced and automated the delivery and utilization of financial services. It eventually contributes to a country's economic growth, showcasing its significance in modern society. Mobile payment offers numerous opportunities and conveniences to customers, especially in making payments. The mobile payment platform further enables safe and secure financial transactions anytime and anywhere (Nadler et al., 2019). However, the acceptance and usage of payment methods in the emerging economy of Malaysia remain relatively low (Yong & Qiang, 2022). The objective set by the Bank Negara Malaysia (BNM) to establish a cashless society by the year 2020, with mobile-based payments as the central focus, has not yet been realized. Market surveys have shown that customer acceptance of e-payments is increasing and many are dependent on it. Malaysia's proactive approach to modernizing its payment infrastructure, promoting financial inclusion, and leveraging changing consumer behavior, have led to a recent growth in the acceptance and adoption of e-payment among customers.

This study aimed to investigate the factors influencing user acceptance of mobile payment in Malaysia, focusing specifically on the working-age group. A quantitative research approach was employed, utilizing an online questionnaire survey distributed to a sample of working-age individuals. The sample consisted of 190 participants. Descriptive analysis was conducted to assess data validity and consistency, while regression analysis was used to test the hypotheses proposed by the model. It was concluded that factors including perceived ease of use, personal innovativeness, and behavioral intention encourage working-age users to accept mobile payment services in Malaysia. In contrast, other factors such as perceived risk and social influence did not show any significant effect on working-age acceptance of mobile payment. This study delves into the viewpoints of working-age users in Malaysia vis-à-vis mobile payment systems, considering the pivotal role of this specific age bracket in fostering a sustainable mobile payment ecosystem.

This study contributes to the advancement and refinement of a theoretical model aimed at assessing its impact on user acceptance of mobile payment. It builds upon existing literature on TAM, incorporating social influence and personal innovativeness, into a single model to predict mobile payment acceptance among users. This unique combination of factors has not been previously tested in the literature. While these factors have been examined individually or as components of other conceptual models, the model proposed in this study is a novel addition to the existing research. The research that examines mobile payment acceptance with the working-age group of users is scarcely researched, especially in the Malaysia emerging market.

The findings of this study have important implications for managers and policymakers who are working towards leveraging the potential of mobile payment services, aligning with Bank Negara's goal of transitioning to a cashless society. The findings also offer valuable insights for managers and practitioners in the payment service industry, enabling them to anticipate crucial factors that influence the adoption of mobile payment services. This understanding can assist managers and service providers in efficiently allocating resources and establishing a viable and lasting mobile payment ecosystem within the country.

This study has some limitations. Specifically, data collection was solely done in the state of Selangor, Malaysia, hence the possibility for other regions in Malaysia to be underrepresented. Moreover, the present investigation only collected data at a specific period. Thus, it is suggested for future studies to gather longitudinal data by examining users' behavioral changes over certain time intervals. This approach would provide a more comprehensive understanding of the phenomenon. Furthermore, despite the relatively strong empirical support for our model, future research can adjust the model by adding security and trust factors including other constructs under related theories such as the UTAUT/UTAUT2 which were deliberately not examined in the current study. Following the recommendation by Karsen et al. (2019), future studies could further include the examination of key technological factors that make people use mobile payment. Understanding key factors such as compatibility, accessibility, and system quality would enable financial services to tailor the right mobile payment to human needs.

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