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Use and behavioural intention using digital payment systems among rural residents: Extending the UTAUT-2 model

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ABSTRACT

Globally, digital payments and their applications have prospered. However, few researchers have sought to look at users' adoption behaviour of digital payments, especially among rural residents. Additionally, a majority of the researchers employed a single theoretical framework nation to investigate this behaviour. Considering these two issues as a research gap, this study uses the UTAUT-2 framework to analyze the key factors that contribute to a behavioural intention to use digital payment systems among the rural residents, extended with perceived security and epistemic value as other influencing factors. This study employed a cross-sectional design with survey research as its research approach. The proposed conceptual model was tested using partial least squares-structural equation modeling (PLS-SEM) analysis on 402 samples with no issues of non-response bias (NRB) and common method bias (CMB). The results indicated that the UTAUT-2 constructs and its extended constructs were positively significantly influencing the behavioural intention with 79.7% of variance explained, where social influence, effort expectancy and epistemic value are the top three constructs that influence the behavioural intention. The outcomes would also be advantageous to the relevant stakeholders in developing and designing strategies to effectively encourage more individuals to adopt digital payment systems, especially among the rural residents.

Nutshell

1. Introduction

Financial technology has recently changed the global financial sector by bringing more easy-payment services to customers particularly in developed countries, thus introducing new options to those in emerging markets. A majority of the governments in these countries specifically view financial technology as a tool to promote financial inclusion. Furthermore, numerous studies have emphasized how information technology-based solutions like e-portfolio financial system [1], mobile payment [2], e-wallet app [3] and even internet banking [4] can greatly increase financial inclusion. It also can be classified as digital payment technology. According to Ref. [5]; the terms digital payment and mobile payment are interchangeable, and both refer to using smartphone technology to conduct financial transactions. Hence, by providing financial services to the vast majority of people, digital payment technology has the enormous potential to transform the lives of millions of people in developing nations [6,7].

Policymakers have focused their emphasis on growing acceptance of digital payments among the many applications of information technology-based solutions offered by financial institutions to the consumers. The idea is that as more people use digital payment method, the price of printing and maintaining physical banknotes would decline [8]. Financial institutions would be able to serve unreachable customers such as in rural areas because reduced costs associated with digital payments will increase society's financial inclusion [5]. Moreover, digital payment technology is regarded as essential to any countries' ability to compete globally especially in Asian market, where the growth rate of non-cash transaction volumes was 32% during a period of 2016–2017 [9]. This finding also aligns with the Ref. [10] conducted by the Malaysian government, where there is an increase in users' volume of utilizing digital payment technologies (online banking, mobile banking, cashless transactions, etc.) among Malaysians from 2016 (41.7%) to 2018 (54.2%). Hence, it shows that Malaysians are moving forward to use the digital payment systems in their financial daily activities.

Having considered the drawbacks and advantages of employing digital payment systems, the understanding of the numerous elements that influence the behavioural intention to use digital payment systems

What is going on?

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from the consumer's standpoint is essential knowledge for developing countries like Malaysia. It is because Ref. [11] stated that the intention to use a digital payment system among Malaysian is still low, where this service is only popular among the urban population. In fact, the Malaysian government has recently distributed around MYR 450 million (USD 97.5 million) in e-cash to 15 million Malaysians all over the country to stimulate and foster the use of digital payment system, especially e-wallets system [12]. Although there were numerous government-led promotion campaigns, there has been some resistance to implement this new technology in Malaysia. Hence the success of this initiative ultimately depends on user's adoption and acceptance to use this technology, particularly in developing countries like Malaysia, where a large portion of the population needs to be financially included. The role of the rural population in the success or failure of any financial inclusion endeavor is undeniable.

What is addressed recently

A majority of the residents in rural areas of the country deal with specific problems, such as a lack of decision-making control and other socio-economic limitations. Given the sizeable number of rural populations in Malaysia, it is critical to comprehend the causes of technology adoption to use digital payment system among them. Currently, Malaysia is at its promising stage to use digitalized transformation procedures. Since digital payment systems can be considered as one of the self-financial decision-making platforms, this technology will help Malaysians be a part of the digitalized transformation era in Malaysia, as well as to fuel economic growth in the rural areas. Hence, this first research gap is significant, given that a population in Malaysian rural areas can be considered significantly large, which is 22.3% from the whole nation population [13]. Hence the voice of this population group will be relevant in any future technological and economic transformations planning. Thus, this study aims to explore factors that influence the use of digital payment systems among Malaysian rural residents. It is because despite the increased acceptance of digital payment options in urban areas' consumers, most of them still favor cash payments, especially in rural areas.

Justify

As for studying technology adoption among the consumers, the majority of previous researchers use the technology acceptance model (TAM) and other theory combinations, such as social cognitive theory (SCT) and innovation diffusion theory (IDT). However, those theories mainly focus on the behavioural and attitudinal link, where there is a lack of explanation to describe the essential of task technology environment, especially TAM model [14]. To overcome the criticism of previous theories, the Unified Theory of Acceptance and Use of Technology 2 (UTAUT-2) was used. This theory can be considered optimal since it is able to cover the issue of task technology environment perception and has been widely validated by many empirical studies [4,15,16]. Hence, the UTAUT-2 model is taken into consideration when conducting this study on the behavioural intention to use digital payment systems. Besides that, past researchers also indicated that perceived security [17,18] and epistemic value [19,20] can also be the crucial factors that influence the behavioural intention to use the digital payment systems. However, these two factors are rarely examined simultaneously with UTAUT-2 model in the context of study. Hence, this study also seeks to fill the aforementioned second research gaps by investigating whether the integration of UTAUT-2 with perceived security and epistemic value provides alternative explanation on the behavioural intention to use a digital payment system if integrated within the Malaysian rural areas resident's behaviors. Hence, this study explores the following two research questions.

RQ1. What are the important factors affecting rural residents' behavioural intention to use digital payment systems?

RQ2. What is the direct relationship of perceived security and epistemic value of digital payment systems toward their behavioural intention to use digital payment systems?

By answering these two research questions, this research will help the managerial decision-making by suggesting supporting factors that financial institutions should focus in their strategic planning toward a digitalization era involving the digital payment systems in the rural areas. Besides that, with a deeper and better understanding of the key predictors, this study will help the authority agencies to create more incentive and also set up an innovative strategic planning to boost-up the intention of using this technology among the rural residents' so that the financial inclusion gap can be fully occupied throughout the whole nation. Thus, this research will help to close the gap in term of population gap as well as theoretical gap in the field of digital payment services literature.

What we expect to resolve

This article is organized as follows. We next discuss the literature review of the study, hypothesis development, theoretical framework, followed by the method and results, then a discussion of the study's findings. The study concludes by discussing the study's contributions, implications and limitations, as well as possible future research directions.

Organization

2. Literature review

Unified theory of acceptance and use of technology-2 (UTAUT-2), perceived security (PS) and epistemic value (EV).

In the past, researchers have claimed that the process of a consumer's intention using a technology is complicated and involved the use of many models to comprehend the situation. For describing technology acceptance mechanism, there are numerous competing models with various determinants. After a comprehensive investigation of prior studies about the technology adoption models, the UTAUT-2 model [14] has been discovered to be the most current model and has been mostly used in the domains of e-banking, e-learning, e-commerce, and e-government study [21] as well as mobile or digital payments [5,22,23].

Hence, this study uses the UTAUT-2 model to understand the acceptance and use of digital payment systems. However, hedonic motivation construct is not included in this study because most of the digital payment systems are already mobile-based, where the usage of smartphones has become common practice today and has already included the elements of hedonistic, social, and utilitarian aspects [5]. In addition, price value construct was also excluded from this study since smartphone users usually pay for internet in monthly bills and do not incur any additional costs, such as when making digital payments [21].

Don't

However, it was stated that using an integrated approach rather than a single theory may offer a better understanding of the complex mechanism of technology acceptance [5]. In the past, researchers have claimed that the UTAUT-2 theory's premises are insufficient to predict technological adoption, particularly when it comes to digital financial services [24]. This is because security issues involving the service provider have a significant impact on online financial transactions. In addition, due to a lack of PS, consumers are hesitant to use any online financial transactions [20].

On the other hand, since digital payment services are not visible, EV's direct effect on intention would be strong ([19]). According to Ref. [25]; EV is an early behaviour of consumer to adopt a new product or service due to the high curiosity or need to learn something new. Moreover [26], indicated that EV is an important factor to increase the likelihood of customers to adopt a mobile banking by creating a surprise element of using the technology. Therefore, by extending UTAUT-2 with PS and EV in this study, we believe our study would offer a robust model for investigating the factors that influence the rural residents' behavioural intention to use digital payment systems that have a wider scope and applicability. Fig. 1 shows the proposed research model for this study.

The influence of performance expectancy (PE) toward behavioural intention (BI) to use digital payment systems.

PE can be defined as the amount of benefit the consumers get when they use the system [21]. A majority of the studies that implement UTAUT-2 theory indicated that PE can be considered as a crucial factor that influence the BI when they use a system [2,15,16,27]. For example,

Don't

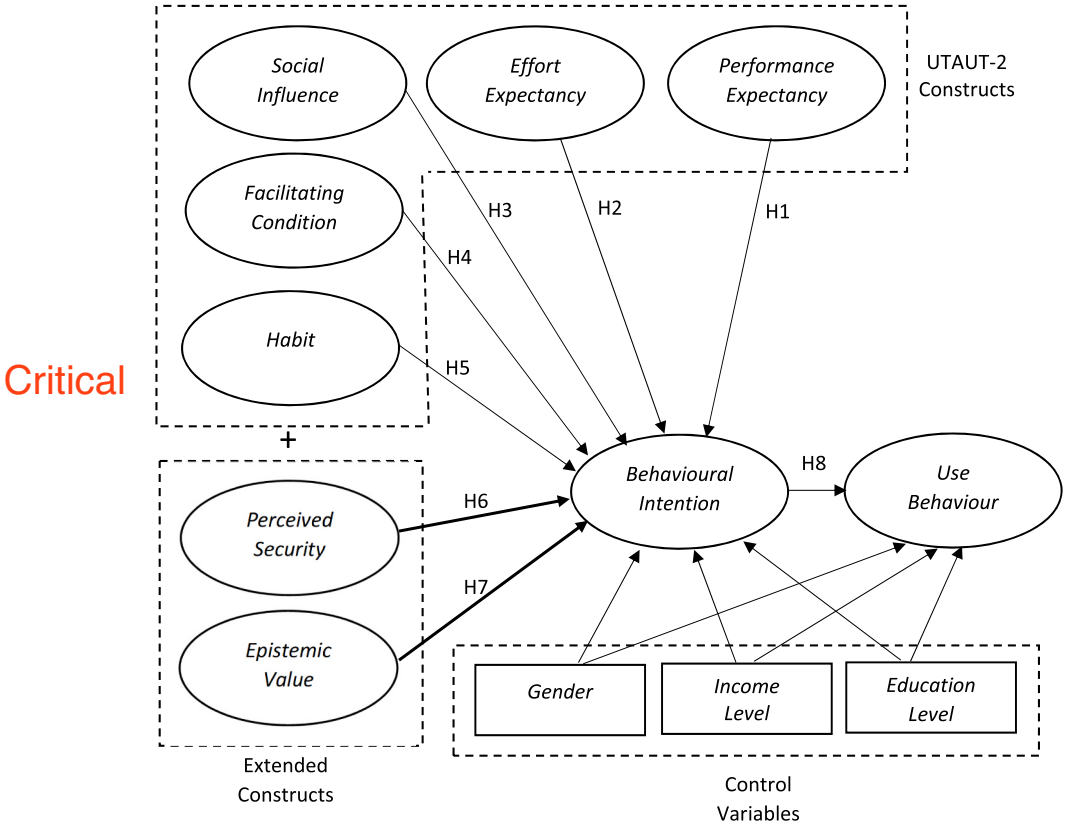

Fig. 1. Research model.

PE was discovered to be a strong predictor of a student's intent to use social media for learning purposes [15] and one's adoption intention of home-health care robotics [16]. In addition, this factor is one of the important factors that directly impact the BI to use mobile payment [28] and e-wallet [3]. Based on the empirical results from previous studies, we hypothesized that when rural residents use a digital payment system, and if they find the digital payment technology will make their payment activities more quickly and effectively, they will be more likely to use digital payment technology in the future. Hence, the following hypothesis is proposed.

H1. PE positively affect BI to use digital payment systems among the rural residents.

The influence of effort expectancy (EE) toward behavioural intention (BI) to use digital payment systems. Be Consistent

EE can be considered as the idea that a system will be simple to use and not take much effort to use it [29]. According to earlier researches, consumers' experiences of utilizing a certain technology have an impact on how convenient they find the technology to be [2,16,30]. In addition, several studies indicated that EE had a favourable impact on students' intention to use the university WeChat Library system [31]. Another study by Ref. [32] also discovered that this factor positively influenced young consumers' intention to use mobile shopping apps. Besides that [33], also confirmed that EE is one of the important factors that lead a consumer to use a self-service ordering system in the restaurant industry. Hence, it is obvious that if a customer wanted to exert less effort, they will undoubtedly want to use any type of technology. Thus, we believe that if the rural residents feel that it is convenient and less effortful to use digital payment technology, in the future they will be more motivated to using it. So, the below hypothesis was formed.

H2. EE positively affect BI to use digital payment systems among the rural residents.

The influence of social influence (SI) toward behavioural intention (BI) to use digital payment systems.

SI is an authentic predictor construct in the UTAUT2 theory. It is defined as the consumers' perspective of what their friends and family think about the usage of the certain technology [15]. According to prior studies in a variety of fields, the significance of SI is what determines consumers' intention to use a particular technology. For example [30], indicated that higher education students are more likely to use m-learning technology when most of their friends influenced them to use it. Findings from another study also show that if a teenager's friends use a wearable technology, then they will also use similar wearable technologies due to their friends' influence [34]. These findings are also consistent with the [28] study, where they indicated that SI has a greater influence to the consumers to use a mobile payments technology. Hence, based on the previous empirical studies, we believe that if digital payment technology is used by the rural residents' friends or family, or recommended by someone who is important to them, the intention to use the digital payment technology among them should be high. We thus posit the hypothesis.

H3. SI positively affect BI to use digital payment systems among the rural residents

The influence of facilitating condition (FC) toward behavioural intention (BI) to use digital payment systems. Topic sentence

According to Ref. [14]; FC is the availability of organizational and infrastructure support needed to successfully employ a technology. Prior studies in the area of technology adoption have emphasized the particular skillset and infrastructure needs for implementing new technology [15,35]. They also indicated that the prediction of consumers' behavioural intention to continue using the technology can be done if they think that they will be able to access the technology in the future [36]. For instance, in the context of mobile shopping, if customers have the tools to use mobile shopping, such as devices and internet access, this will improve their intention to use the technology [32]. Furthermore, customers are more likely to accept cashless payment if they have

real-time assistance and information available to them, access to all banking and financial resources, and well-integrated systems and processes that can guarantee all facilitating key features [24]. Hence, we believe that if rural residents receive the appropriate training and practical experience, they have a higher likelihood of adopting digital payment. As a result, we suggest.

H4. FC positively affect BI to use digital payment systems among the rural residents.

The influence of habit (HA) toward behavioural intention (BI) to use digital payment systems.

[14] defined HA as a person's regular manner in achieving specific expectation as a result of repeatedly engaging in a behaviour. It is well established from earlier studies that a customer's behavioural intention to embrace a particular technology is significantly influenced by habit [16,37]. For example [38], indicated that a majority of consumers are surveyed to use mobile payment systems shortly after the introduction of cashless payment, and the usage is frequent. Another study observed that the increased number of people using FinTech services is due to a higher possibility of repeated usage of the services [39]. Therefore, in the current study, HA may be the outcome of a person's repetitive usage of digital payment systems during their regular use of smart devices and the internet in their daily lives. It follows that a rural resident's behavioural intention to use digital payment system will significantly be embedded in their habit as part of repeatedly engaging in a behaviour of using it. Hence, it can be said.

H5. HA positively affect BI to use digital payment systems among the rural residents.

The influence of perceived security (PS) toward behavioural intention (BI) to use digital payment systems.

Despite its advantages, the increased adoption of digital services like digital payment services has raised concerns. According to [21]and [40], PS is a concerning issue when consumers used it, since they must disclose their personal information in order to utilize digital payment, which raises concerns about potential data misuse [20,41]. indicated that the efforts taken by the service provider to secure financial and personal information from any potential breaches in the transaction process will be used by customers as to determine the level of security of the digital technology.

Moreover, digital technology with a high level of security is seen as a guarantee that personal data is safe and won't be misplaced or stolen by other parties for improper or unethical purposes. Hence, if the service has a strong privacy policy, customers will feel more secure and will increase the likelihood of them utilizing the technology. For instance Ref. [42], stated that "security and privacy" and "intention to use digital payment transactions" are positively correlated. This is also supported by Ref. [43] where PS is greatly valued as positively significant in contributing to the users' perception of websites' trustworthiness. Therefore, we believe that if the rural residents feel the security provided by digital payment providers is at the high level, the intention of using this technology will be at the maximum level. Hence, we argue that.

H6. PS positively affect BI to use digital payment systems among the rural residents.

The influence of epistemic value (EV) toward behavioural intention (BI) to use digital payment systems.

EV is the perceived net utility obtained from the ability to pique interest, offer novelty, and satisfy a desire for information [44]. [45] indicated that customers are drawn to new goods and services because they are interested in alternatives, wish to adjust their conditions, or want to get new experiences. Hence, it can be concluded that EV is the capacity that concerns acquiring new information via products or services and can predict intention [25,46]. In the past, studies discovered that EV significantly and directly affects BI in a variety of sector settings. For example, in the Uber-ridesharing services, EV has a considerable impact on BI of the users [47]. In a study conducted by Ref. [48] EV is also a dominant factor that influences the customers to use mobile apps, where [45] also achieved the same conclusion in the e-learning study.

However, in the context of digital payments there is still a lack of previous studies about the effects of EV towards BI. Only small numbers of research try to investigate these two constructs' relationships. For example [19,46], conducted a research about these two constructs that are similar to digital payments technology. They indicated that EV refers to the pleasant emotions stimulated by the use of this technology [19]. These emotions may have been motivated by a desire to confirm the capabilities of technology offered.

Therefore, prospective consumers will want to learn more about this technology's usability and validate their opinions about it in light of similar services available in the market. This may encourage users to become familiar with the digital payment services and adopt them as a new way of living. Hence, based on these exposures, we believe that if the rural residents feel the digital payment technologies can satisfy their desire in using it for their daily life routine, the intention of using this technology will be at high level. Thus, we postulate.

H7. EV positively affect BI to use digital payment systems among the rural residents.

The influence of behavioural intention (BI) to use digital payment systems and usage behaviour (UB).

BI denotes a person's willingness to engage in a specific behaviour, and it is a predicate of UB [14]. In a variety of technological acceptance studies, BIs are also taken into consideration as an immediate precursor of actual behaviour usage [21]. Additionally, prior research has shown a strong connection between BI and UB [2,5,38]. Therefore, in this study we believe that if the BI to use digital payment systems among the rural residents is high, then the probability of the UB should be also high. Thus, we postulated that.

H8. BI to use digital payment systems positively affect UB among the rural residents.

3. Research methods

3.1. Sampling and data collection

Depending on the purpose of this study, cross-sectional survey-based methodology was used because this method allows us to study all targeted constructs simultaneously at one time. Besides that, this method allows us to save time and manpower because the data is collected only once. The targeted population was the citizens residing in rural areas of Segamat, Kluang and Tangkak districts in Johor state and this also made them as a unit of analysis for this study. All respondents from these districts shared a common characteristic where a majority of them work in the agriculture sector since the main economy production for these three districts are agricultural products such as palm oil, rubber, and vegetable crops [49]. In this study, a minimum of 262 samples are required for this study based on G-Power analysis, where it was estimated based on 95% of statistical power with 5% anticipated effect size, and 10 predictor variable numbers (including control variables).

Since to establish a reliable sampling frame based on digital payment users that covers these three districts is unreliable, this study employ non-probability sampling strategy, which is specifically using a convenience sampling technique. This sampling technique allow us taking samples that are conveniently located around of targeted location for this study. In terms of data collection procedure, the data was collected from October 2021 until November 2021 by using a structured questionnaire and was administered to the targeted respondents using personal interview method, where we divided the task of data collection among ourselves by going to the focal public points such as palm fruit sales centers, latex sales centers, vegetable wholesale centers, bus stands, railway stations, shopkeepers and retail stores. This method can increase the response rate for this study since we were able to get 402

valid respondents. Besides that, this data collection method can also give a direct explanation to the respondents for any inquires raised about the study. On the other hand, we used three control variables (gender, income level and education level) as our method to minimize the tradeoff between external and internal validities in our study.

3.2. Questionnaire formulation and scale development

All items used in measuring the targeted constructs were adapted from the previous study and modifications are made to the subject of digital payment systems. The study has mainly adopted items for UTAUT-2 constructs from Ref. [50]; [35]and [14]. The items for PS were adapted from [36]and the EV items were adapted from Ref. [26]. Besides that, all items were measured using a seven-point Likert scale, where 1 indicates strongly disagree and 7 indicates strongly agree since by using the a seven-point Likert scale, it can enhance validity and reduce interpolation of the measurements [51,52].

All items were developed using the English language and was evaluated by three domain experts in the field of digital payment system as to establish content validity. The questionnaire was updated to reflect the suggestions given by the subject matter experts. Then, the questionnaire was translated into Malay language by utilizing a professional translator on account of our respondents being from rural areas. As suggested by Ref. [53]; the questionnaire was again translated to English language to get the translational equivalence. The updated questionnaire was then used for pre-testing with a sample of 30 subjects in July 2021. Based on the responses, the questionnaires were modified to make sure that each question was accurate and easy to answer.

A pilot test was then conducted based on 50 subjects in August 2021 to evaluate the reliability of the measurements. The pilot test samples were selected on the basis of similar characteristics as the target population group, which is the sample must be a rural resident and work in the agricultural sector. However, the location where the pilot test was conducted is completely different from the location of the target population to avoid receiving a redundant response from the same respondent during the actual study phase. The Cronbach's Alpha analysis indicated that each construct was essentially higher than the recommended minimum value of 0.7 [54]. Hence, it can be concluded that the modified version of Malay language questionnaire contained an acceptable level of validity and reliability. Therefore, the actual data collection process was conducted using this modified version of questionnaire.

3.3. Non-response bias (NRB) and common-method bias (CMB)

NRB is a situation where the participants' response to the survey systematically differs from those who were invited to participate but did not respond [55], and this can limit the generalization of the findings. Comparison analysis as suggested by Ref. [56] was done to ensure the NRB is not an issue for this study by dividing the dataset into two data sets (early respondents vs late respondents). The *t*-test analysis indicated that the NRB is not affecting the study since there is no significant difference ($p = 0.58$) between the early wave ($n = 233$) and late wave ($n = 169$) groups. As a result, 402 responses were deemed suitable in each stage of analysis. According to Ref. [57]; CMB is a crucial issue when the researcher employs survey method. The researcher performed Harman's single-factor test for detecting CMB [58] and the results indicated that the cumulative variance extracted for the single factor was 33.6%. Hence, the CMB issue is not a concern in this research since the percentage is less than 50%.

3.4. Data analysis techniques

Data normality and outliers were evaluated using the skewness and kurtosis values as suggested by Ref. [54]. Since the results show that both skewness and kurtosis values were in the range of ±2 (), the data can be considered to follow a normal distribution and outliers are not a critical issue in this dataset [54].

A structural equation modeling (SEM) analysis was used in this study since this multivariate statistical analysis can estimate causal relationship between the latent constructs [59]. According to them, there are two types of SEM analyses – covariance-based (CB-SEM) and variance-based (PLS-SEM). Since the objective of this study is to extend the existing theory, PLS-SEM is preferred over the CB-SEM because this analysis is a robust technique to modeling research constructs [59,60]. Hence, the Smart-PLS software [61] was used for the data analysis.

The PLS-SEM model is evaluated in two steps: (1) measurement model evaluation and (2) structural model evaluation [62]. In measurement model, it involves evaluating the validity and reliability of the constructs and its related indicators. To accomplish this, indicator loadings, composite reliability (CR), Cronbach's Alpha (CA) and average variance explained (AVE) are computed [62]. As for discriminant validity, the analysis of Fornell-Larcker criteria and Heterotrait-Monotrait (HTMT) were used [62,63].

The second stage implicates testing the structural model by evaluating the hypotheses. Before proceeding to this part, variance inflation factor (VIF) values are used for an additional assessment of the structural model to examine the collinearity evaluation among the values of all sets of predictor constructs. After that, R^2 values of all constructs were assessed and R^2 value up to 0.2 is considered to be suitable [62]. As for the path coefficients, t-values, p-values and 95% bias corrected bootstrap confidence interval for the structural were evaluated by performing 5000 bootstrapping samples. The standardized-root-mean-square-residual (SRMR) indicator is used for accessing the model's goodness of fit because it allows us to evaluate the average size of the discrepancies among correlations as an absolute measure [63].

4. Results

4.1. Participant profiles

The respondents of this study were the rural residents from Segamat, Kluang and Tangkak districts in Johor state. A majority of the participants were male (65.7%) respondents. Out of the total respondents, 60.5% claimed that they only have primary or secondary school education level, 25.6% claimed they graduated from university and the remaining 13.9% indicated that they never had any formal education system. Among all the respondents, most of them have a monthly income of RM2000 and below (60.9%), whereas only 3% have a monthly income of more than RM4000. Table 1 shows the detailed profiles of the respondents.

4.2. Measurement model evaluation

In evaluating the reflective measurement model, four criteria were used as suggested by Ref. [62] which are loading, average variance

Table 1
Participant profiles.

Profiles	Frequency	Percentage
Gender		
Male	264	65.7
Female	138	34.3
Education Level		
Do not have any formal education	56	13.9
Primary or secondary school level	243	60.5
Graduate from university	103	25.6
Monthly Income Level		
≤ RM1000 (≤USD216)	84	20.9
RM1001 – RM2000 (USD217 – USD432)	197	49
RM2001 – RM3000 (USD433 – USD648)	67	16.7
RM3001 – RM4000 (USD649 – USD864)	42	10.4
≥RM4001 (≥USD865)	12	3

explained (AVE), composite reliability (CR) and Cronbach's Alpha (CA) values. As shown in Table 2, loading value for each item was above the minimum value 0.70 with at least 5% level of significance ($p < 0.05$) as recommended by Ref. [62]. Besides that, the AVE values, ranged between 0.610 and 0.911, are also above the threshold value of 0.50 as advised by Ref. [62]. In addition, all values of CR and CA are well above the cut-off value of 0.70 [59], suggesting the seven-point Likert scale has good reliability. On the other hand, a discriminant validity condition for these reflective constructs is also met, as evidenced by the Heterotrait-Monotrait (HTMT) ratio values being less than 0.85 (Table 3) [63]. Besides that, the Fornell-Larcker discriminant analysis reported in Table 3 also re-confirmed this finding, where the diagonal values were higher than the off-diagonal values [62].

4.3. Structural model evaluation and hypothesis testing

Since the measurement model was found to be reliable and valid, the structural model evaluation was carried out as suggested by Ref. [62]. The collinearity assessment was evaluated by examining the inner VIF values. Since all the inner VIF values are less than 3.30, it is indicated that no serious issue of multicollinearity and common method bias exist in this model [64]. Besides that, the predictive capabilities of the model can be considered within the acceptable capabilities since the R^2 value for the BI to use digital payment system is 0.797, and 0.687 for the UB of digital payment system. Hence, it is indicated that the integration of UTAUT-2 constructs with PS and EV constructs were able to explain 79.7% of variance toward BI, whereas at the same time BI was also able to explain around 68.7% of variance explained toward UB. This indicated that the data was a good fit to the respective model. This is also supported by the result of SRMR value, where the value was less than 0.08 as suggested by Ref. [63].

Pertaining to path coefficient analysis, 5000 resample analysis was conducted as suggested by Ref. [62]. The analysis in Table 4 indicated that PE ($\beta = 0.109$, $t = 2.191$, $p < 0.05$), EE ($\beta = 0.133$, $t = 2.3157$, $p < 0.05$), SI ($\beta = 0.187$, $t = 2.867$, $p < 0.01$), FC ($\beta = 0.177$, $t = 3.244$, $p < 0.01$), HA ($\beta = 0.157$, $t = 2.681$, $p < 0.01$), PS ($\beta = 0.107$, $t = 2.413$, $p < 0.05$) and EV ($\beta = 0.132$, $t = 2.095$, $p < 0.05$) were found statistically positively influenced the BI to use digital payment system. Hence, hypotheses H1 until H7 were supported. The model also tested the relationship of BI to the UB, which was also found to be significant in the positive direction ($\beta = 0.830$, $t = 37.904$, $p < 0.01$), thereby supporting H8. In addition, all the control variables in this study were found to not be having an effect to the BI and UB endogenous constructs. Fig. 2 shows the detailed results and statistical scores of the PLS–SEM.

5. Discussion

This study was conducted to explore the significant factors influencing the BI to use the digital payment system by citizens residing in the rural areas of Malaysia. This study fully utilized a well-known technology adoption model (UTAUT-2) and integrated it with PS and EV to explore the contributing factors to the digital payment system's behavioural intention to use among the rural residents in Malaysia. Similar to previous research findings in the context of technology adoption, our study indicated that selected factors in the UTAUT-2 model can explain the BI to use this technology as well as UB of the stated targeted respondents in this study. Basically, our proposed model was able to explained 79.9% of the variance in BI to use the digital payment system on integrating the UTAUT-2 model with PS and SE constructs by employing the PLS-SEM statistical analysis.

This empirical study using the PLS-SEM analysis shows that PE, EE, SI, FC and HA UTAUT-2 constructs have a significant positive relationship towards BI to use digital payment systems among the rural residents. The analysis indicated that PE has significant correlation on BI to use digital payment system among the rural residents, which is in line with earlier researches from different settings [3,16,28]. This shows the rural residents' intent to use digital payment system as it provides benefits to enhance their daily financial transactions.

Besides that, EE also has significant effect on BI to use digital payment system and confirms with earlier researches that focused on the adoption of technology case [31–33]. This indicated that a simple and easy-to-use platform is recommended for people so that they are

Table 2
Measurement model.

Variable	Indicator	Skewness	Kurtosis	Loading	t-value	AVE	CR	CA
Performance Expectancy	PE1	−0.551	−0.712	0.957	163.791**	0.911	0.969	0.951
	PE2	−0.352	−0.396	0.964	180.028**			
	PE3	−0.420	−0.705	0.943	79.441**			
Effort Expectancy	EE1	−0.155	−0.625	0.952	136.550**	0.851	0.945	0.912
	EE2	−0.146	−0.649	0.943	136.929**			
	EE3	−0.217	−0.556	0.870	42.728**			
Social Influence	SI1	−0.457	−0.632	0.931	114.600**	0.868	0.952	0.924
	SI2	0.063	−0.836	0.930	68.929**			
	SI3	−0.157	−0.721	0.935	76.779**			
Facilitating Condition	FC1	−0.095	−0.826	0.911	86.480**	0.771	0.910	0.852
	FC2	−0.438	−0.618	0.862	37.223**			
	FC3	−0.328	−0.587	0.859	37.844**			
Habit	HA1	−0.278	−0.190	0.931	94.406**	0.865	0.950	0.922
	HA2	−0.400	−0.341	0.944	137.595**			
	HA3	−0.104	−0.766	0.915	84.296**			
Perceived Security	PS1	−0.607	−0.454	0.914	87.532**	0.810	0.944	0.922
	PS2	−0.216	−0.393	0.909	95.401**			
	PS3	−0.145	−0.804	0.878	57.126**			
	PS4	−0.182	−0.729	0.897	66.049**			
Epistemic Value	EV1	−0.050	−0.792	0.877	42.453**	0.836	0.939	0.902
	EV2	0.034	−0.893	0.940	118.270**			
	EV3	−0.060	−0.886	0.925	88.934**			
Behavioural Intention	BI1	−0.030	−0.831	0.918	81.209**	0.834	0.953	0.934
	BI2	−0.137	−0.931	0.917	81.996**			
	BI3	−0.070	−0.802	0.916	99.539**			
	BI4	−0.296	−0.427	0.902	69.755**			
Use Behaviour	UB1	−0.331	−0.193	0.927	74.257**	0.877	0.955	0.930
	UB2	−0.163	−0.737	0.939	89.575**			
	UB3	−0.247	−0.582	0.943	127.450**			

Note: VIF = Variance Inflation Factor; AVE = Average Variance Explained; CR = Composite Reliability; CA = Cronbach's Alpha; **$p < 0.01$.

Table 3
Results of discriminant validity.

Variables	PE	EE	SI	FC	HA	PS	EV	BI	UB
PE	**0.955**	*0.795*	*0.797*	*0.731*	*0.784*	*0.775*	*0.789*	*0.825*	*0.791*
EE	0.805	**0.922**	*0.832*	*0.725*	*0.812*	*0.748*	*0.817*	*0.792*	*0.813*
SI	0.747	0.766	**0.932**	*0.796*	*0.786*	*0.792*	*0.801*	*0.834*	*0.816*
FC	0.668	0.650	0.807	**0.878**	*0.754*	*0.757*	*0.816*	*0.836*	*0.827*
HA	0.797	0.887	0.782	0.678	**0.930**	*0.799*	*0.808*	*0.824*	*0.839*
PS	0.732	0.697	0.733	0.682	0.742	**0.900**	*0.792*	*0.809*	*0.807*
EV	0.744	0.747	0.774	0.727	0.775	0.729	**0.914**	*0.829*	*0.834*
BI	0.778	0.795	0.794	0.768	0.814	0.753	0.790	**0.913**	*0.839*
UB	0.745	0.752	0.786	0.801	0.779	0.752	0.795	0.795	**0.936**

Note: PE = Performance Expectancy; EE = Effort Expectancy; SI = Social Influence; FC = Facilitating Condition; HA =Habit; PS = Perceived Security; EV = Epistemic Value; BI = Behavioural Intention; UB = Use Behaviour; The value in the diagonal (bold) is a square root of the AVE of each variable and the element off-diagonal value is the inter-correlation value between variables; HTMT ratio are those represented in italics above the square root of AVE.

Table 4
Structural model and hypothesis testing.

Hypothesis	Path	VIF	PC	t-statistic	p-value	95% BCa Bootstrap CI	Decision
H1	PE → BI	2.942	0.109	2.191*	0.028	(0.015, 0.211)	/
H2	EE → BI	2.553	0.133	2.315*	0.021	(0.020, 0.251)	/
H3	SI → BI	2.589	0.187	2.867**	<0.01	(0.059, 0.317)	/
H4	FC → BI	2.235	0.177	3.244**	<0.01	(0.070, 0.284)	/
H5	HA → BI	2.043	0.157	2.681**	<0.01	(0.039, 0.269)	/
H6	PS → BI	2.942	0.107	2.413*	0.016	(0.020, 0.193)	/
H7	EV → BI	2.523	0.132	2.095*	0.036	(0.007, 0.255)	/
H8	BI → UB	1.016	0.830	37.904**	<0.01	(0.783, 0.868)	/
Control	GEN → BI	1.028	0.021	0.925 (NS)	0.355	(-0.021, 0.067)	X
	GEN → UB	1.019	−0.016	0.581 (NS)	0.562	(-0.071, 0.036)	X
	INC → BI	1.045	0.018	0.800 (NS)	0.424	(-0.025, 0.061)	X
	INC → UB	1.027	0.006	0.209 (NS)	0.834	(-0.048, 0.058)	X
	EDU → BI	1.032	−0.019	0.903 (NS)	0.367	(-0.062, 0.019)	X
	EDU → UB	1.022	0.026	1.013 (NS)	0.311	(-0.026, 0.073)	X

Note: SRMR = 0.066; PE = Performance Expectancy; EE = Effort Expectancy; SI = Social Influence; FC = Facilitating Condition; HA =Habit; PS = Perceived Security; EV = Epistemic Value; BI = Behavioural Intention; UB = Use Behaviour; GEN = Gender; INC = Income Level; EDU = Education Level; PC = Path coefficient; BCa = Bias corrected; CI = Confidence interval; NS = Not significant; [a]The bootstrap samples was 5000 samples;/= Supported; X = Not supported; *p < 0.05; **p < 0.01.

encouraged to adopt digital technology.

As for the relationship between SI and BI to use digital payment systems, the results of the study are consistent with previous studies that focused on technology adoption intention case [15,30,34]. This indicated that rural residents are more likely to use digital payment systems when their surrounding people encourage them to use it.

Statistical results also indicated that there is a relationship between FC and BI to use digital payment systems among the rural residents. This means that the rural residents get resources, modules, and training commercials from the financial institution as to increase the probability of using the digital payment systems. This result is also supported by the early researches conducted in different types of technology adoption [24,32,35].

Similar to FCs, HA has also been found to be statistically significantly correlated to the BI to use digital payment systems among the rural residents. It shows that the rural residents basically can formulate a repetitive behaviour as to routinely use this technology in their daily lives. This finding also aligned with the findings from Refs. [37,39] as well as [38] studies.

In addition to that, our study extended the UTAUT-2 with the PS construct. The additional model considerably raised the explanatory power of the model since it shows the strong positive relationship between PS and BI to use digital payment systems among the rural residents. Hence, it is indicated that rural residents believe this technology will not harm them and their financial information will not be exposed when they conduct a financial transaction. This belief will lead to greater BI to use digital payment systems among them. The results of our study are consistent with [20,42] and Sivanthanu (2019).

Interestingly, EV was also found to be significantly correlated to the BI to use digital payment system. This indicated that the belief among the rural residents about their ability to familiarise themselves with the digital payment services is high through the concerns of acquiring new information via the services. Hence, it will produce a positive likelihood among them to use the digital payment systems as a new way of living. These results aligned with the previous studies in the context of using a self-service technology [19,47,48].

The results also demonstrated that BI to use digital payment systems positively influenced the UB of using this technology. This finding also confirms the earlier research findings in the context of technology adoption [2,5,38]. This indicated that the rural residents basically use this digital payment technology if the digital payment system met their expectation to use. Our findings suggest that by focusing all the significant factors that influence the BI to use this technology, it may help the financial digital developers to effectively reach the users in a way that it could influence their usage behaviour.

In addition, gender, income level and education level control factors had no influence on BI and UB to use digital payment system. This demonstrates that regardless of the issues of gender inequality, difference in standard of living or even in education level, rural residents will have a good intuition to use this technology. This finding also aligns with the [27,65]; and [66] studies.

5.1. Theoretical contribution

Building on the extant literature to examine the influencing factors of BI to use digital payment systems among rural residents, the researchers integrate the dominant model of technological acceptance (UTAUT-2) with perceived security and epistemic value, which have not been fully explored in earlier studies on the topic, especially in rural residents' context. The results of this study is an important contribution to

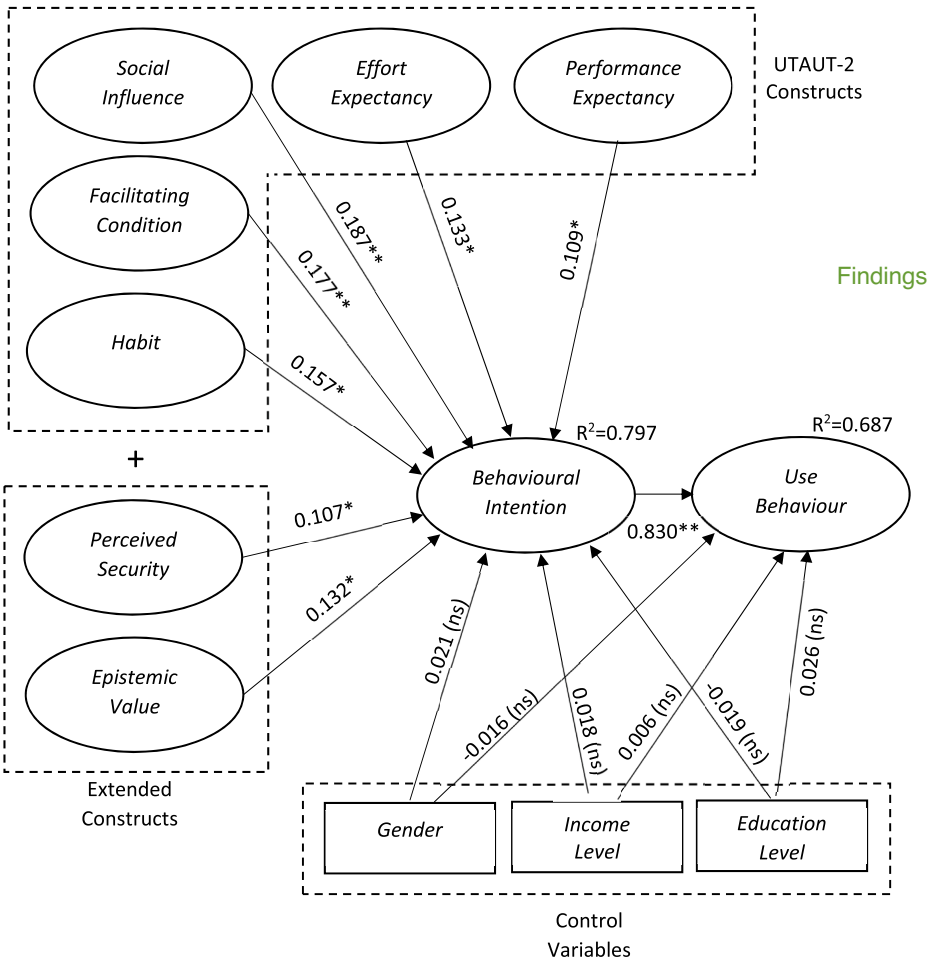

Fig. 2. PLS-SEM structural analysis output.

financial services as far as rural residents in any developing countries are also part of important customers that use digital payment system.

Previous studies in the technology adoption context that only solely use the UTAUT-2 constructs are only able to explain around 45% up to 65% [21]; [67] [68–71]; of variance explained in the BI to use. However, the explanatory power of our model is 79.9%, which shows that our study is a strong contributor to the knowledge area in the domain of technology adoption.

Besides that, our findings are also applicable to all other South East Asian countries since the demographic profile of the rural residents is approximately equal as for increasing financial inclusion and bringing about their citizens, especially in the rural region, to actively participate in the digitalization era in financial sector. Therefore, this study offers fresh insights into exploring the BI to use digital payment system among the rural residents.

5.2. *Practical implications*

From the practical perspective of the UTAUT-2 domains, this study indicated that PE, EE, SI, FC and HA are the factors that increase the BI to use digital payment systems. Hence, aspect relating to these factors must be the focus of attention of any financial digital service providers in their endeavour to increase the likelihood of the users, especially in the rural areas, to use this technology.

The service providers should provide the users with various facilities to encourage them to use this technology. This can be achieved through increasing the number of micro-support sites as well as training centers especially in the rural areas. This initiative basically can increase the BI to use this technology by providing some initial training to the rural residents. It is because most of them can use their smartphone features like making calls, operating some music applications, watching video through the social media, etc. But most of them have limited knowledge in using some applications that required some basic knowledge in using it. Hence, by giving training on essential smartphone usage, it will instill confidence in them in using the digital payment system. Besides that, the financial digital service providers can create experimental accounts of digital payment rather than using their own accounts for allowing them to create a positive experience and let them know how easy to use it as well as how much benefit they will get by using this technology.

Furthermore, this study indicated that the decision on using the digital payment system among the rural residents is based on the influence of their surrounding people such as their friends and family members that have an experience in using this technology. So, the financial digital service providers should create a positive social awareness among the citizens to spread a positive word of mouth about using this technology to the target users. This could be achieved by rewarding the users who promote digital payment system among their contacts. These users' can in turn be projected as technology ambassadors or role models, which can in turn increase the BI to use rates.

In terms of PS, the study showed a significant positive relationship on the BI to use digital payment systems among the respondents. It suggests that the use of this technology tend to increase if a user perceives it to be safe, especially the feeling of privacy loss or a risk to loss user's information is low. Therefore, the financial digital service providers should

promote perceived security by emphasizing that this system provides a secure platform where user's personal data is protected by all means. One way of doing this is the promoters of digital payment technology should educate users that this system is safe to use by organizing formal and informal informative sessions. To further make users feel safe, their personal sensitive information stored by the digital payment technology can be encoded and extra risk preventing plans and policies should be developed.

EV was also found as one of the important factors the correlated to the BI to use digital payment systems in this study. It is indicated that the rural users tend to use this technology actively when they believe they are capable of using this technology and make it as the new way of living. Therefore, the financial digital service providers need to develop the technical knowledge that users need to use digital payment system, especially to the rural residents. This can be achieved by actively demonstrating the method of using this technology to the users through mediums that can easily reach them. This is done in order to make them perform financial transactions using this technology to pique interest, provide novelty, and satisfy the need for knowledge. Besides that, the financial digital service providers should also reduce the complicated technical skills in using this system. This would be desirable since a majority of the rural residents are not well exposed to the use of internet of things product. By doing this, the probability that they would use this technology should be high.

5.3. Limitation and scope for the future research

This study acknowledges a few limitations and provides recommendations for future research. First, it should be mentioned that our study uses a cross-sectional design, which is common in the literature on the subject. However, the ability to directly examine causality is constrained by this research methodology. As a result, we recommend using an experimental research design in subsequent studies to support the causality of the correlations under investigation. This study focuses on the predictors of UTAUT-2 with the integration of PS and EV predictors on BI to use digital payment system among the rural residents in Malaysia. However, from the observations during the data collection, the acceptance of users in rural areas may be affected by the internet coverage facility provided by the government and government incentives policy of using this technology. Thus, future studies are recommended to examine the role of internet coverage facility in the residence area and the government incentives policy to promote the usage of this technology towards the BI to use this technology.

Besides the constructs of the present study, extending UTAUT-2 with some important theories like diffusion of innovation theory (DOI), task-technology fit (TTF), etc. Will help in a better understanding of BI to use digital payment system among the rural residents. Furthermore, the sample of this study only consists of residents located in one of the states in Malaysia, which is Johor, and this study only focuses on Segamat, Kluang and Tangkak districts' rural residents. Besides that, the data collection was done using convenience sampling, therefore the results of this study cannot be generalized to the whole population of Malaysia's rural residents. Thus, future studies are recommended to conduct this study across states in Malaysia (wide-ranging samples) that focus on the rural areas to increase the generalizability of the findings.

6. Conclusion

As a conclusion, this study statistically demonstrates that UTAUT-2 constructs and its extended constructs were significantly influence the behaviour intention of using the digital payment system among the rural residents in Malaysia. The analysis revealed that social influence, facilitating condition, habit, effort expectancy and epistemic value are the top five elements influencing behavioural intention when using digital payment system. These results contribute to the understanding that digital financial service providers may develop a digital payment system that can increase the likelihood of its use by rural residents. Therefore, our study can help emerging or established digital payment system providers to better design their systems through the use of innovative and more user-friendly systems.

Author statement

Mohd Hanafi Azman Ong: Conceptualization, Methodology, Analysis, Data Collection, Writing-Original draft preparation, Supervision, Muhammad Yassar Yusri: Data Collection, Conceptualization, Writing, Reviewing and Editing, Nur Syafikah Ibrahim: Data Collection, Conceptualization, Writing, Reviewing and Editing.

Data availability

The authors do not have permission to share data.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.techsoc.2023.102305.

Appendix

Table A1
Measurement items

Construct	Item	Description
Performance Expectancy	PE1	I find digital payment services useful in my daily life
	PE2	Using digital payment services increases my productivity
	PE3	Using digital payment services helps me accomplish things more quickly
Effort Expectancy	EE1	Learning how to use digital payment services is easy for me
	EE2	My interaction with digital payment services is understandable
	EE3	It is easy for me to become skilful at using digital payment services
Social Influence	SI1	People who are important to me think that I should use digital payment services
	SI2	People who influence my behaviour think that I should use digital payment services
	SI3	People whose opinions that I value encourage I use digital payment services
Facilitating Condition	FC1	I have the necessary resources to use digital payment services
	FC2	I have necessary knowledge to use digital payment services
	FC3	I can get help from others when I have difficulties using digital payment services
Habit	HA1	The use of digital payment services has become a habit for me
	HA2	I must use digital payment services
	HA3	Using digital payment services has become natural to me

(continued on next page)

Table A1 (*continued*)

Construct	Item	Description
Perceived Security	PS1	I would consider the digital payment services to be trust worthy
	PS2	I think that the digital payment services would have a sufficient technical capacity to protect my private information
	PS3	I would have a trust in the security measures used by digital payment services to protect my financial information
	PS4	I would be confident with the security system adopted by digital payment services
Epistemic Value	EV1	I use digital payment services because I am always curious to try something new
	EV2	I use digital payment services because I like to get in on the latest technology trends
	EV3	I use digital payment services because I like having a versatile life
Behavioural Intention	BI1	I intend to use digital payment services in the future
	BI2	I will always try to use digital payment services in my daily life
	BI3	I plan to use digital payment services in future
	BI4	I predict I would use digital payment services in the future
Use Behaviour	UB1	I used digital payment services frequently in my daily life
	UB2	I depend on digital payment services in my financial transaction
	UB3	I will recommend digital payment services to others

References

[1] S.M. Alshahrani, H. Mohamed, M. Mukhtar, U. Asma'Mokhtar, The adoption of the e-learning portfolio management system in the Technical and Vocational Training Corporation (TVTC) in Saudi Arabia, International Journal of Information Management Data Insights 3 (1) (2023), 100148.

[2] N. Upadhyay, S. Upadhyay, S.S. Abed, Y.K. Dwivedi, Consumer adoption of mobile payment services during COVID-19: extending meta-UTAUT with perceived severity and self-efficacy, Int. J. Bank Market. 40 (5) (2022) 960–991.

[3] W.H. Bommer, S. Rana, E. Milevoj, A meta-analysis of eWallet adoption using the UTAUT model, Int. J. Bank Market. 40 (4) (2022) 791–819.

[4] M. Naeem, Developing the antecedents of social influence for Internet banking adoption through social networking platforms: evidence from conventional and Islamic banks, Asia Pac. J. Mark. Logist. 33 (1) (2020) 185–204, https://doi.org/10.1108/APJML-07-2019-0467.

[5] R. Manrai, U. Goel, P.D. Yadav, Factors affecting adoption of digital payments by semi-rural Indian women: extension of UTAUT-2 with self-determination theory and perceived credibility, Aslib J. Inf. Manag. 73 (6) (2021) 814–838.

[6] R. Arjun, A. Kuanr, K.R. Suprabha, Developing banking intelligence in emerging markets: systematic review and agenda, International Journal of Information Management Data Insights 1 (2) (2021), 100026.

[7] J. Auroza, M. Vega, Why people use digital payments: evidence from micro data in Peru, Latin American Journal of Central Banking 2 (4) (2021), 100044, https://doi.org/10.1016/j.latcb.2021.100044.

[8] B. Frączek, A. Urbanek, Financial inclusion as an important factor influencing digital payments in passenger transport: a case study of EU countries, Research in Transportation Business & Management 41 (2021), 100691, https://doi.org/10.1016/j.rtbm.2021.100691.

[9] Capgemini, "World payments report, 2019", available at: https://www.capgemini.com/es-es/wp-content/uploads/sites/16/2019/09/World-Payments-Report-WPR-2019.pdf, 2019.

[10] Internet Users Survey 2018, Malaysian Communication and Multimedia Commission: Malaysia, ISSN, 2018, pp. 1823–2523.

[11] V. Balakrishnan, N.L. Mohd Shuib, Drivers and inhibitors for digital payment adoption using the Cashless Society Readiness-Adoption model in Malaysia, Technol. Soc. 65 (2021), 101554.

[12] The Star, Malaysians can apply for RM30 E-Cash from Wednesday. https://www.thestar.com.my/news/nation/2020/01/14/malaysians-can-apply-for-rm30-e-cash-from-wednesday-jan-15, 2020.

[13] Statista, Rural percentage", available at: https://www.statista.com/statistics/760965/malaysia-share-of-rural-population, 2022.

[14] V. Venkatesh, J.Y. Thong, X. Xu, Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology, MIS Q. 1 (36) (2012) 157–178.

[15] D.-A. Sitar-Taut, D. Mican, Mobile learning acceptance and use in higher education during social distancing circumstances: an expansion and customization of UTAUT2, Online Inf. Rev. 45 (5) (2021) 1000–1019, https://doi.org/10.1108/OIR-01-2021-0017.

[16] S.Y. Yeoh, P.N. Chin, Exploring home health-care robots' adoption in Malaysia: extending the UTAUT model, Int. J. Pharmaceut. Healthc. Market. 16 (3) (2022) 392–411, https://doi.org/10.1108/IJPHM-11-2020-0099.

[17] S. Singh, R. Srivastava, Predicting the intention to use mobile banking in India, Int. J. Bank Market. 36 (2) (2018) 357–378.

[18] S. Chaudhary, T. Schafeitel-Tähtinen, M. Helenius, E. Berki, Usability, security and trust in password managers: a quest for user-centric properties and features, Computer Science Review 33 (2019) 69–90.

[19] S. Berraies, K. Ben Yahia, M. Hannachi, Identifying the effects of perceived values of mobile banking applications on customers: comparative study between baby boomers, generation X and generation Y, Int. J. Bank Market. 35 (6) (2017) 1018–1038.

[20] A. Balapour, H.R. Nikkhah, R. Sabherwal, Mobile application security: role of perceived privacy as the predictor of security perceptions, Int. J. Inf. Manag. 52 (2020), 102063.

[21] B. Sivathanu, Adoption of digital payment systems in the era of demonetization in India: an empirical study, Journal of Science and Technology Policy Management 10 (1) (2019) 143–171.

[22] S. Kaur, S. Arora, Role of perceived risk in online banking and its impact on behavioral intention: trust as a moderator, Journal of Asia Business Studies 15 (1) (2020) 1–30.

[23] K. Owusu Kwateng, K.A. Osei Atiemo, C. Appiah, Acceptance and use of mobile banking: an application of UTAUT2, J. Enterprise Inf. Manag. 32 (1) (2019) 118–151, https://doi.org/10.1108/JEIM-03-2018-0055.

[24] K.P. Gupta, R. Manrai, U. Goel, Factors influencing adoption of payments banks by Indian customers: extending UTAUT with PC, Journal of Asia Business Studies 13 (1) (2019) 173–195.

[25] J. Carlson, M.M. Rahman, A. Taylor, R. Voola, Feel the VIBE: examining value-in-the brand-page-experience and its impact on satisfaction and customer engagement behaviours in mobile social media, J. Retailing Consum. Serv. 46 (2019) 149–162.

[26] H. Karjaluoto, R. Glavee-Geo, D. Ramdhony, A.A. Shaikh, A. Hurpaul, Consumption values and mobile banking services: understanding the urban–rural dichotomy in a developing economy, Int. J. Bank Market. 39 (2) (2021) 272–293.

[27] L.T.T. Tran, P.T. Nguyen, Co-creating blockchain adoption: theory, practice and impact on usage behavior, Asia Pac. J. Mark. Logist. 33 (7) (2021) 1667–1684.

[28] P. Raman, K. Aashish, To continue or not to continue: a structural analysis of antecedents of mobile payment systems in India, Int. J. Bank Market. 39 (2) (2021) 242–271, https://doi.org/10.1108/IJBM-04-2020-0167.

[29] K. Ramos, Factors influencing customers' continuance usage intention of food delivery apps during COVID-19 quarantine in Mexico, Br. Food J. 124 (3) (2022) 833–852.

[30] A. Alowayr, Determinants of mobile learning adoption: extending the unified theory of acceptance and use of technology (UTAUT), International Journal of Information and Learning Technology 39 (1) (2022) 1–12, https://doi.org/10.1108/IJILT-05-2021-0070.

[31] Q. Zhang, Q. Xi, A model about students' behavioural intention to use university WeChat Library, Digital Library Perspectives 38 (4) (2022) 429–443, https://doi.org/10.1108/DLP-03-2021-0026.

[32] M.S. Hanif, M. Wang, M.U. Mumtaz, Z. Ahmed, W. Zaki, What attracts me or prevents me from mobile shopping? An adapted UTAUT2 model empirical research on behavioral intentions of aspirant young consumers in Pakistan, Asia Pac. J. Mark. Logist. 34 (5) (2022) 1031–1059, https://doi.org/10.1108/APJML-09-2020-0659.

[33] T. Yang, I.K.W. Lai, Z.-B. Fan, Q.-M. Mo, Interactive service quality on the acceptance of self-service ordering systems for the restaurant industry, Journal of Hospitality and Tourism Technology 12 (2) (2021) 271–286, https://doi.org/10.1108/JHTT-02-2020-0041.

[34] M.S. Rahman, S. Das, G.M.S. Hossain, T. Tajrin, Teenagers' behavioural intention towards wearable technologies and intention to recommend others: an empirical study in Bangladesh, Journal of Science and Technology Policy Management 13 (1) (2022) 110–131.

[35] A.A. Alalwan, Y.K. Dwivedi, N.P. Rana, Factors influencing adoption of mobile banking by Jordanian bank customers: extending UTAUT-2 with trust, Int. J. Inf. Manag. 37 (3) (2017) 99–110, https://doi.org/10.1108/IJBM-07-2018-0183.

[36] A. Musa, H.U. Khan, K.A. AlShare, Factors influence consumers' adoption of mobile payment devices in Qatar, Int. J. Mobile Commun. 13 (6) (2015) 670–689.

[37] S. Rahi, Assessing individual behavior towards adoption of telemedicine application during COVID-19 pandemic: evidence from emerging market, Libr. Hi Technol. 40 (2) (2022) 394–420.

[38] K. Gupta, N. Arora, 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) (2020) 88–114, https://doi.org/10.1108/SAJBS-03-2019-0037.

[39] S. Odei-Appiah, G. Wiredu, J.K. Adjei, Fintech use, digital divide and financial inclusion, Digital Policy, Regulation and Governance 24 (5) (2022) 435–448.

[40] A.K. Kar, What affects usage satisfaction in mobile payments? Modelling user generated content to develop the digital service usage satisfaction model, Inf. Syst. Front 23 (2021) 1341–1361.
[41] M. Hafez, Examining the effect of consumption values on mobile banking adoption in Bangladesh: the moderating role of perceived security, Kybernates (2022), https://doi.org/10.1108/K-03-2022-0333 ahead-of-print No. ahead-of-print.
[42] M. Al-Okaily, H. Alqudah, A.A. Al-Qudah, N.S. Al-Qadi, H. Elrehail, A. Al-Okaily, Does financial awareness increase the acceptance rate for financial inclusion? An empirical examination in the era of digital transformation, Kybernetes (2022), https://doi.org/10.1108/K-08-2021-0710 ahead-of-print No. ahead-of-print.
[43] J.A. Sánchez-Torres, F.-J.A. Canada, A.V. Sandoval, J.-A.S. Alzate, E-banking in Colombia: factors favouring its acceptance, online trust and government support, Int. J. Bank Market. 36 (1) (2018) 170–183, https://doi.org/10.1108/IJBM-10-2016-0145.
[44] S. Talwar, A. Dhir, P. Kaur, M. Mäntymäki, Why do people purchase from online travel agencies (OTAs)? A consumption values perspective, Int. J. Hospit. Manag. 88 (2020), 102534.
[45] A. Ray, P.K. Bala, Y.K. Dwivedi, Exploring values affecting e-learning adoption from the user-generated-content: a consumption-value-theory perspective, J. Strat. Market. 29 (5) (2021) 430–452.
[46] A.A. Amponsah, A.F. Adekoya, B.A. Weyori, Improving the financial security of national health insurance using Cloud-based blockchain technology application, International Journal of Information Management Data Insights 2 (1) (2022), 100081.
[47] A.A.-T. Hasan, Technology attachment, e-Attitude, perceived value, and behavioral intentions towards Uber-ridesharing services: the role of hedonic, utilitarian, epistemic, and symbolic value, Journal of Contemporary Marketing Science 5 (3) (2022) 239–265.
[48] I.A. Zolkepli, S.N.S. Mukhiar, C. Tan, Mobile consumer behaviour on apps usage: the effects of perceived values, rating, and cost, J. Market. Commun. 27 (6) (2021) 571–593.
[49] Johor State Planning Division (2021) available at: https://bpen.johor.gov.my/index.php/data-asas-ekonomi-johor/.
[50] G. Baptista, T. Oliveira, Understanding mobile banking: the unified theory of acceptance and use of technology combined with cultural moderators, Comput. Hum. Behav. 50 (2015) 418–430, https://doi.org/10.1016/j.chb.2015.04.024.
[51] G.A. Churchill, J.P. Peter, Research design effects on the reliability of rating scales: a Metanalyses, J. Market. Res. 21 (4) (1984) 360–375.
[52] K. Finstad, Response interpolation and scale sensitivity: evidence against 5-point scales, Journal of Usability Studies 5 (3) (2010) 104–110.
[53] J.W. Creswell, J.D. Creswell, Research designs qualitative, quantitative, and mixed methods approaches, in: Fast Facts to Loving Your Research Project, SAGE Publications, Inc, California, 2018.
[54] D. George, P. Mallery, SPSS for Windows Step by Step: A Simple Study Guide and Reference, Prentice Hall, Upper Saddle River, US, 2010.
[55] E.F. Lewis, M. Hardy, B. Snaith, An analysis of survey reporting in the imaging professions: is the issue of non-response bias being adequately addressed? Radiography 19 (3) (2013) 240–245.
[56] J.S. Armstrong, T.S. Overton, Estimating non-response bias in mail surveys, J. Market. Res. 14 (3) (1977) 396–402.
[57] P.M. Podsakoff, S.B. MacKenzie, J.-Y. Lee, N.P. Podsakoff, Common method biases in behavioral research: a critical review of the literature and recommended remedies, J. Appl. Psychol. 88 (5) (2003) 879–903.
[58] S.B. MacKenzie, P.M. Podsakoff, Common method bias in marketing: causes, mechanisms, and procedural remedies, J. Retailing 88 (4) (2012) 542–555.
[59] J.F. Hair, C.M. Ringle, M. Sarstedt, PLS-SEM: indeed, a silver bullet, J. Market. Theor. Pract. 19 (2) (2011) 139–151.
[60] J. Henseler, On the convergence of the partial least square path modelling algorithm, Comput. Stat. 25 (1) (2010) 107–120.
[61] C.M. Ringle, S.B. Wende, Jan-Michael, Smartpls 3. Bönningstedt: SmartPLS, 2015. Retrieved from, http://www.smartpls.com.
[62] J.F. Hair, G.T.M. Hult, C.M. Ringle, M. Sarstedt, A Primer on Partial Least Squares Structural Equation Modelling, second ed., Sage Publications, Thousand Oaks, 2017. PLS-SEM.
[63] J. Henseler, C.M. Ringle, M. Sarstedt, A new criterion for assessing discriminant validity in variance-based structural equation modelling, J. Acad. Market. Sci. 43 (1) (2015) 115–135.
[64] N. Kock, Common method bias in PLS-SEM: a full collinearity assessment approach, Int. J. e-Collaboration 11 (4) (2015) 1–10.
[65] S. Mamonov, R. Benbunan-Fich, Unlocking the smart home: exploring key factors affecting the smart lock adoption intention, Inf. Technol. People 34 (2) (2021) 835–861, https://doi.org/10.1108/ITP-07-2019-0357.
[66] P.K. Chopdar, M.D. Lytras, A. Visvizi, Exploring factors influencing bicycle-sharing adoption in India: a UTAUT 2 based mixed-method approach, Int. J. Emerg. Mark. (2022), https://doi.org/10.1108/IJOEM-06-2021-0862 ahead-of-print No. ahead-of-print.
[67] A. García-Milon, C. Olarte-Pascual, E. Juaneda-Ayensa, J. Pelegrín-Borondo, Tourist purchases in a destination: what leads them to seek information from digital sources? Eur. J. Manag. Bus. Econ. 30 (2) (2021) 243–260.
[68] A.B. Ozturk, W. Wei, N. Hua, R. Qi, Factors affecting attendees continued use of mobile event applications, Journal of Hospitality and Tourism Technology 12 (2) (2021) 307–323.
[69] M.N. Addy, E.T. Addo, T.E. Kwofie, J.E. Yartey, Predicting the adoption of e-procurement in construction project delivery in Sub-Saharan Africa: an application of UTAUT2, Construct. Innovat. (2022), https://doi.org/10.1108/CI-09-2021-0174 ahead-of-print No. ahead-of-print.
[70] S. Damberg, Predicting future use intention of fitness apps among fitness app users in the United Kingdom: the role of health consciousness, Int. J. Sports Mark. Spons. 23 (2) (2022) 369–384, https://doi.org/10.1108/IJSMS-01-2021-0013.
[71] N. Rudhumbu, Applying the UTAUT2 to predict the acceptance of blended learning by university students, Asian Assoc. Open Univ. J. 17 (1) (2022) 15–36.