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An Empirical Study on Continuance Intention to Use Mobile Payment Applications in Goa, India

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Abstract

The aim of the study is to examine the factors influencing users' continuance intention to adopt and use mobile payment applications, using the extended UTAUT2 model. The study was carried out using a structured questionnaire, among 203 users of mobile payment applications. To validate the proposed model, Structural Equation Modelling (SEM) technique was used. The result indicated that perceived trust (PT) is the strongest predictor of continuance intention to use mobile payment applications, followed by price saving (PS), habit (HB), social influence (SI), and hedonic motivation (HM). On the other hand, performance expectancy (PE), effort expectancy (EE), and facilitating condition (FC) do not influence the adoption of mobile payment applications. The UTAUT2 model with perceived trust was able to predict 69 per cent of variation in the users' intention to use mobile payment applications on a regular basis. The service providers and developers of mobile payment applications must emphasise on improving the privacy and security of the user's information. Moreover, developing appropriate strategies for encouraging the new users, along with motivating the existing users to continuously use mobile payment applications, will act as a unique selling proposition for the company.

Keywords: Mobile Payment Applications, Wallet, E-Payment, Continuance Intention, UTAUT2, Perceived Trust

Introduction

Mobile phones when newly launched had functions limited to calling and texting; however, the advancement in technology enabled a broad range of new functionalities to be added to mobile phones, due to which it has become an essential part of our daily life for all kinds of activities (banking, shopping, education, healthcare, entertainment, hospitality, and also travel, to name a few). In the past few years, improvement in technology and increased consumption of smartphones have marked the popularity of mobile commerce applications (Kim et al., 2010; Lee & Wong, 2016; Tarhini et al., 2019), which created an impact on our daily life. Hence, it became essential for all the companies to restructure their business model based on mobile technology innovations (Akturan & Tezcan, 2012) and to design mobile technology-based alternative business solutions (Kuganathan & Wikramanayake, 2014). As a result, we can see various mobile applications being developed by companies in India, such as the e-tailing industry (Flipkart, Amazon, Myntra & so on), tourism and hospitality (Make my Trip, Yatra, Booking.com, Trivago, Expedia & so on), payment system (UPI-based) (PhonePe, Google Pay, PayTM, Bhim, Amazon Pay), education (Byju's, Topper, Vedanta, Unacademy & so on), healthcare (Calorie Counter: My Fitness pal, Healthyfy me, JE Fit – work tracker, Daily Yoga, and so on), and also entertainment (Netflix, Amazon Prime Video, Disney + Hotstar, Zee5 & so on).

Mobile payments, also known as mobile money, mobile money transfer, and mobile wallet, refers to payments made through Near Field Communication (NFC), contact-less payments, e-wallets, m-wallets, SMS-based payment methods, and so on, using a mobile device (Wikipedia, 2020; Gupta & Arora, 2019). Instead of paying with cash, consumers will use mobile payment applications to pay for a wide range of goods and services. After demonetisation, the Indian market witnessed a significant

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growth of 12.7 per cent in the digital payment market (IBEF, 2020). The number of vendors receiving digital payments also increased from 1.5 million in 2016-17 to more than ten million in 2019 (IBEF, 2020; Statista, 2020). It is estimated that India will have the fastest growth in mobile payments transactions in terms of value, with a CAGR of over 20% between 2019 and 2023 due to new users joining the mobile payment segment (Statista, 2020). Even the Government of India has invested in developing and setting up a voucher-based payment system, known as e-RUPI (Government of India, 2022) to promote cashless transactions. Innovating and developing mobile applications is one side of the coin; ultimately, the success depends on the users' adoption, acceptance, and continuance intention of using mobile applications on a regular basis. Thus, it becomes essential to understand the continuance intention. The present study attempts to examine the factors influencing users' continuance intention to adopt and use mobile payment applications.

Literature Review

Background

The extant literature review reveals that several theoretical frameworks have been developed to understand the intention to adopt and continue using the applications in information systems. The prominent among them are: Theory of Reasoned Action (TRA) by Martin Fishbein and Ajzen (1975); Technology Adoption Model (TAM) by Davis (1989); Theory of Planned Behaviour (TPB) by Icek Ajzen (1991); Extended Technology Adoption Model (TAM 2) by Venkatesh and Davis (2000); Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh, Morris, Davis and Davis (2003); and Extended Unified Theory of Acceptance and Use of Technology (UTAUT2) by Venkatesh, Thong and Xu (2012) (Sharma & Mishra, 2014; Castanha et al., 2021). The other theories were Innovation Diffusion Theory (IDT) by Everett Roger in 1960, Social Cognitive Theory (SCT) by Bandurra in 1986, Model of Personal Computer Utilisation (MPCU) by Thompson and Higgins in 1991, and, Motivation Model (MM) by Davis, Bagozzi and Warshaw in 1992 (Sharma & Mishra, 2014; Castanha et al., 2021). The UTAUT2 theory can explain the variance of 74 per cent on the intention to adopt and use the applications (Venkatesh et al., 2012), due to which UTAUT2 was widely accepted and tested in different contexts of information systems.

This study also used the UTAUT2 model with a few modifications. Firstly, behaviour intention construct was replaced with continuance intention (CI) to assess the user's intention to use mobile payment applications on a continuous basis. Continuance intention (CI) is defined as the degree to which users prefer to use mobile payment applications continuously (Xu, 2014). Secondly, the price value (PV) construct was replaced with price saving (PS), as usage of mobile payment applications helps users save money through different offers (Escobar-Rodriguez & Carvajal-Trujillo, 2014). And lastly, perceived trust (PT) was added to the model, which positively influences the user's intention to use mobile payment applications (Slade et al., 2015; Madan & Yadav, 2016; Indrawati & Putri, 2018).

Mobile Payment

Mobile payment is the transfer of funds using portable electronic devices in return for a product or service. Mobile payments combine payment systems with mobile devices and provide the users the benefit of initiating, authorising, and completing the financial transactions using mobile payment applications (Slade et al., 2015), thus enabling the user to transfer the funds using mobile applications instead of physically making cash payments. Various mobile payment applications are available at the disposal of users; however, the key success of the technology depends on its adoption and continuous usage of the same by the intended users (Min et al., 2008).

The literature review identified that the level of accessibility, transaction speed, comfort, convenience, security concern, and monetary and non-monetary offers were major factors in choosing mobile payment methods (Chen & Nath, 2008; Renjan & Kamal, 2019). A significant number of studies used the Technology Adoption Model (TAM) framework to understand mobile payment adoption (Slade et al., 2015). Moreover, researchers prefer the UTAUT2 model, as it was able to explain more variation in behaviour intention towards technology adoption (Venkatesh et al., 2012; Castanha et al., 2021). In the Indian context, Madan and Yadav (2016) tried to examine the factors influencing the adoption of mobile

wallets, using the UTAUT2 model with the inclusion of promotion benefits, perceived risk, perceived trust, and perceived regulatory support. On similar grounds, Soodan and Rana (2020) extended the UTAUT2 with security, privacy, and saving to measure more variation in consumer behaviour towards mobile wallet adoption. Moreover, efforts were made to understand the usage of mobile payment after demonetisation (Gupta & Arora, 2020; Sivathanu, 2019).

The present study attempted to fill the missing gap in literature by using the UTAUT2 model, with the inclusion of perceived trust (PT), to examine the factors influencing users' intention to adopt and use mobile payment applications on a regular basis. As per the authors' knowledge, based on the literature available, no study has been done in the state of Goa to understand mobile payment adoption. Moreover, this study also tried to examine the moderating effects of demographic variables on the adoption of mobile payment applications, making this study unique and providing valuable insight to academicians, researchers, the government, service providers, applications developers, and the different communities at large.

Research Hypothesis and Model

This research used the basic framework of the UTAUT2 model and extended it by integrating one new construct, perceived trust (PT), to understand the continuance intention of users towards mobile payment applications. The following are the variables and research hypotheses.

Performance Expectancy (PE)

Performance expectancy (PE) refers to the extent to which an individual believes that using a particular technology would provide better benefits in performing certain activities than existing technology (Venkatesh et al., 2003; Venkatesh et al., 2012). In the context of mobile payment, PE can be defined as the degree to which users of mobile payment technology believe that using m-payment applications for sales and purchasing transactions will improve and speed up their performance (Madan and Yadav, 2016). The concept of PE has been captured from five earlier models, namely perceived usefulness (TAM/TAM2), extrinsic motivation (MM), job-fit (MPCU), relative advantage (IDT), and outcome expectation (SCT) (Venkatesh et al., 2003). Prior studies stated that PE positively influences CI (continuance intention) to adopt mobile payment applications (Deningtyas & Ariyanti, 2017; Gupta & Arora, 2020; Hussain et al., 2019; Indrawati & Putri, 2018; Karjaluoto et al., 2020; Madan & Yadav, 2016; Oliveira et al., 2016; Sivathanu, 2019; Slade et al., 2015; Soodan & Rana, 2020). Hence, the following hypothesis was proposed:

H1: PE positively influences CI to use mobile payment applications.

Effort Expectancy (EE)

EE refers to the degree of ease associated with the use of technology (Venkatesh et al., 2003). In the context of mobile payment, EE can be defined as the degree to which users of mobile payment technology believe that the application is easy to understand and use. This construct was developed using three constructs of previous models, namely perceived ease of use (TAM/TAM2), complexity (MPCU), and ease of use (IDT) (Venkatesh et al., 2003). The earlier studies on mobile payment applications proved that EE positively influences CI (Gupta and Arora, 2020; Hussain et al., 2019; Karjaluoto et al., 2020; Sivathanu, 2019). Hence, the following hypothesis was proposed:

H2: EE positively influences ci to use mobile payment applications.

Social Influence (SI)

SI is defined as the degree to which consumers perceive how others in their social circle (families, friends, relatives, co-workers, media, and social media) believe they should use a particular technology (Cudjoe et al., 2015; Merhi et al., 2019; Venkatesh et al., 2003). In the context of mobile payment, SI can be defined as the extent to which users' decision to use mobile payment applications is influenced by the opinions of their families, friends, relatives, peer groups, and co-workers. This construct has been widely used to understand the intentions towards the adoption of technology, and is developed using constructs such as subjective norm (TRA, TAM2, TPB), social factors (MPCU), and image (IDT) (Venkatesh et al., 2003). Numerous researchers have proved that SI influences the

continuance intention to use mobile payment technology (Deningtyas & Ariyanti, 2017; Hussain et al., 2019; Indrawati & Putri, 2018; Madan & Yadav, 2016; Oliveira et al., 2016; Sivathanu, 2019; Slade et al., 2015; Soodan & Rana, 2020). Hence, the following hypothesis was proposed:

H3: SI positively influences CI to use mobile payment applications.

Facilitating Condition (FC)

FC refers to the extent to which an individual believes that all the necessary support exists for using a particular technology (Venkatesh et al., 2003). In terms of mobile payment, FC can be defined as the belief of users about having access to the necessary resources (mobile, Internet, bank account) for using mobile payment applications (Cheong et al., 2004). Venkatesh et al. (2003) integrated FC from three different constructs, namely perceived behavioural control (TBP), compatibility (IDT), and facilitating condition (MPCU). Several mobile payment studies found FC to be a significant predictor of continuance intention (Gupta & Arora, 2020; Hussain et al., 2019; Madan & Yadav, 2016; Sivathanu, 2019; Soodan & Rana, 2020). Hence, the following hypothesis was proposed:

H4: FC positively influences ci to use mobile payment applications.

Hedonic Motivation (HM)

Venkatesh et al. (2012) defined HM as the fun or pleasure derived from using a technology. This construct focuses on intrinsic utilities; although researchers argue that the primary driver of using the technology is task-oriented, consumers also seek entertainment while using the technology (Soodan & Rana, 2020). HM positively influences the continuance intention to adopt and use the mobile payment system, as proven in earlier studies (Deningtyas & Ariyanti, 2017; Indrawati & Putri, 2018; Slade et al., 2015; Sivathanu, 2019; Soodan & Rana, 2020), and hence, the following hypothesis was proposed:

H5: HM positively influences ci to use mobile payment applications.

Price Saving (PS)

The price value (PV) construct of UTAUT2 was replaced by the PS variable. The reasons are: usage of mobile payment applications does not involve any cost in terms of downloading or for using any other services provided; and also, using mobile payment applications enables users to save money in the form of cash-back offers or any related offers (Escobar-Rodriguez & Carvajal-Trujillo, 2014; Indrawati et al., 2020a; 2020b). PS can be defined as the benefits which the users enjoy in the form of discounts and offers for using the mobile payment technology. This construct is another important predictor of continuance intention that positively influences mobile payment applications usage (Deningtyas & Ariyanti, 2017; Indrawati & Putri, 2018; Madan & Yadav, 2016; Soodan & Rana, 2020). Thus, the following hypothesis was proposed:

H6: PS positively influences ci to use mobile payment applications.

Habits (HB)

HB is defined as the extent to which consumers automatically perform a behaviour by learning from repeated usage (Venkatesh et al., 2012). In terms of mobile payment, HB refers to the users' behaviour in using mobile payment applications automatically and naturally for performing any financial transaction. This construct is considered to be one of the important predictors of continuance intention to use mobile payment technology (Deningtyas & Ariyanti, 2017; Gupta & Arora, 2020; Hussain et al., 2019; Indrawati & Putri, 2018; Karjaluoto et al., 2020; Sivathanu, 2019; Slade et al., 2015). Hence, the following hypothesis was proposed:

H7: HB positively influences ci to use mobile payment applications.

Perceived Trust (PT)

The new construct, PT, was added to the UTAUT2 model to understand the intention of users of mobile payment technology. It is defined as the degree to which users believe that mobile payment applications providers are trustworthy with respect to the security and privacy

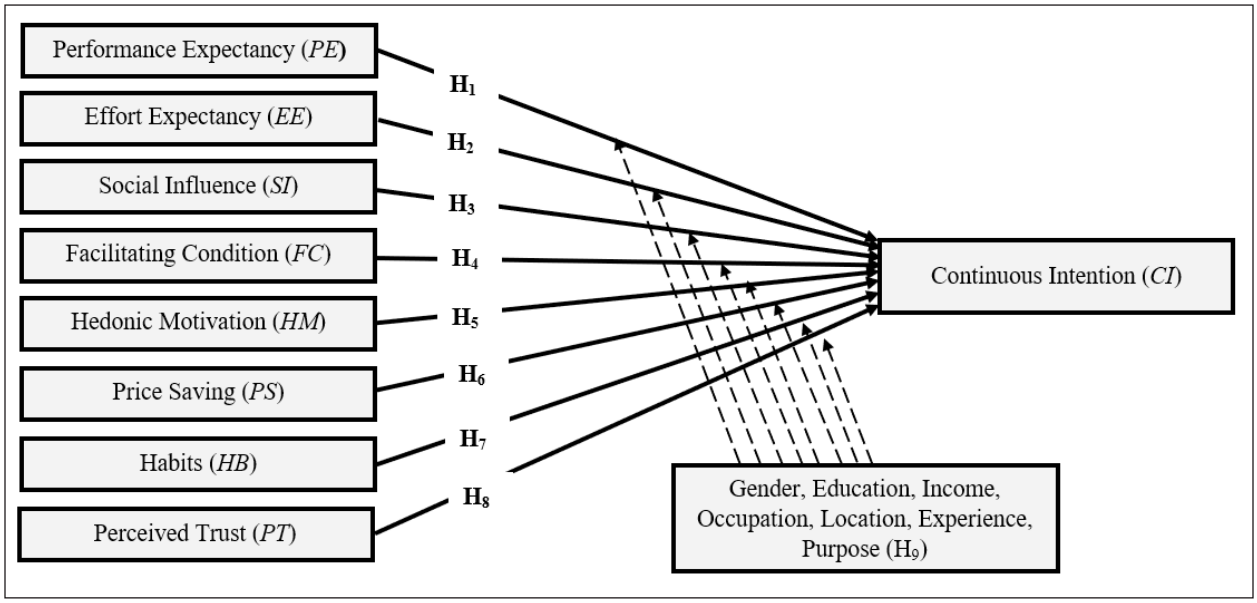
policies they follow (Madan & Yadav, 2016). In mobile banking services, PT is considered to be the most important predictor of continuance intention (Alalwan et al., 2017; Merhi et al., 2019). Similarly, studies on mobile payment adoption proved that PT is considered to be the most influential predictor of intention to use the applications (Indrawati & Putri, 2018; Madan & Yadav, 2016; Slade et al., 2015). Hence, the following hypothesis was proposed:

H8: PT positively influences ci to use mobile payment applications.

Moderating Variables

The present study tried to examine the moderating effects of gender, education, income, occupation, location, experience, and purpose on the proposed model. It was identified that very few studies tried to understand the effects of moderating variables on the UTAUT2 model; thus, the present study fills the missing gap. In terms of gender, males and females have different perception towards adoption and use of technology (Venkatesh & Morris, 2000). Similarly, highly qualified people, with a good educational background, prefer to use technology (Kwateng et al., 2019). Income, location, and user experience moderate the decision to adopt and use technology (Indrawati & Tohir, 2016; Kwateng et al., 2019; Merhi et al., 2019). Hence, the following hypothesis was proposed:

H9: Gender/education/income/occupation/location/ experience/ purpose moderates all the relationship among the constructs of the research model.



Source: Authors' own compilation.

Fig. 1: Conceptual Model

Research Methodology

The present study aims at investigating the factors influencing users' continuance intention to use mobile payment applications, by using the extended UTAUT2 model. The work was conceptualised and the questionnaire was developed in June-November 2019. To validate the proposed model, an online survey was conducted using a structured questionnaire distributed among the respondents, based on convenience sampling, from December 2019 to March 2020. The Google Forms links were distributed to the first group of 60 students, requesting them to share the link with their friends, family members, and neighbours. The respondents were clearly instructed to participate only if they used mobile payment applications. The average sample size of earlier studies

was 253. A total of 214 responses were received, and after filtering the data using the criteria to eliminate incomplete responses, 203 valid responses were considered for data analysis. Smart PLS software was used to analyse the data and to validate the extended UTUAT2 proposed model. The tools and techniques used are descriptive statistics, confirmatory factor analysis, and structural equation modelling.

The structured questionnaire was divided into two sections: first, to understand the demographic profile of users of mobile payment applications, and second, the factors influencing continuance intention to use mobile payment applications. The demographic profile includes gender, age, education, income, occupation, location, marital status, time period, and purpose of using mobile payment applications. The proposed model consists of nine constructs, which were measured using 45 items, five items per construct. Items used to measure PE, EE, SI, FC, HM, PS, and HB were adopted from Hussain et al. (2019), Indrawati et al. (2020a; 2020b), Venkatesh et al. (2003; 2012). PT and CI were adopted from the studies of Alalwan et al. (2017), Indrawati et al., (2020a; 2020b), and Madan and Yadav (2016). All the items used were modified accordingly to suit the context of this study, and measured using the five-point Likert's scale, ranging from '1' strongly disagree to '5' strongly agree.

Analysis and Results

This section deals with the results of the descriptive statistics, measurement model, structural equation model, and moderation effects.

Descriptive Statistics

As shown in Table 1, the sample is evenly divided based on gender, with 50.7 per cent male and 49.3 per cent female respondents. The sample is dominated by respondents aged up to 29 years (92.6 per cent). A majority of the respondents have post-graduate or professional degrees (63.1 per cent). With respect to income, the sample is relatively evenly distributed, with 54.2 per cent earning less than Rs. 1 lakh and 45.8 per cent earning more than Rs. 1 lakh. Regarding occupation, 59.1 per cent of the sample belong to the non-working group, whereas 40.9 per cent are employed. A majority (71.9 per cent) of the respondents reside in North Goa, whereas around 28.1 per cent of the respondents live in South Goa. Similarly, about 68 per cent of the respondents have an experience of more than six months in the usage of mobile payment applications, whereas 32 per cent are new to this technology.

Table 1: Results of Descriptive Statistics

Demographic	*Groups*	*Frequency*	*Percentage*
Gender	Male	103	50.7
	Female	100	49.3
Age	Up to 29 years	188	92.6
	Above 29 years	15	7.4
Education	Up to Graduation	75	36.9
	PG and above	128	63.1
Income	Less than Rs. 1 Lakh	110	54.2
	More than Rs. 1 Lakh	93	45.8
Occupation	Working Class	83	40.9
	Non-Working Class	120	59.1
Location	North Goa	146	71.9
	South Goa	57	28.1
Experience	Less than 6 Months	65	32.0
	More than 6 Months	138	68.0

Source: Authors' own compilation.

Measurement Model

Table 2 exhibits the result of confirmatory factor analysis. To validate the relationship between the constructs of the proposed model, the first step is to test the factor loadings, construct reliability, convergence, and discriminate validity (Hair et al., 2016; Shaw & Sergueeva, 2019). To validate data, Smart PLS algorithm was used to measure the outer loading for each item of the nine constructs. If the factor loading is within the acceptable limit of 0.7, each item is considered strongly related to the associated construct (Hair et al., 2010; Henseler et al., 2009; Shaw & Sergueeva, 2019). One item of FC and HM and two items of PS were below the acceptable limits, and hence, were removed to have good validity content. To test the construct reliability and validity, Cronbach Alpha (CA),

Composite Reliability (CR), and Average Variance Extracted (AVE) were used. It can be seen that Cronbach alpha for all nine constructs is within the acceptable limits of 0.8 (Cronbach & Meehl, 1955; Shaw & Sergueeva, 2019), ranging from 0.94 (PT) to 0.8 (PS). Further, all the values of composite reliability were above 0.8, ranging from 0.96 (PT) to 0.88 (FC, PS). It is suggested that average variance extracted should be above 0.5 (Fornell & Larcker, 1981; Hair et al., 2010; Henseler et al., 2009), and it was found that the values of all constructs are within the acceptable limit, ranging from 0.81 (PT) to 0.65 (PE, EE). Discriminant validity helps understand whether each item represents its own construct and is distinct from other constructs (Fornell & Larcker, 1981; Hair et al., 2010). It is the square root of AVE, and all values must be greater than any correlation between any other construct (Hair et al., 2014). Thus, since all items and construct values are within the acceptable limits, it can be concluded that the proposed model is satisfactory with respect to reliability and validity.

Table 2: Result of Confirmatory Factor Analysis

Construct Name	*Loadings*	*CA*	*CR*	*AVE*	*DV*
Performance Expectancy (PE)		0.87	0.90	0.65	0.80
PE1: I find m-payment useful for making transactions	0.81				
PE2: Using m-payment helps in getting faster services	0.85				
PE3: M-payment increases chances of making services	0.86				
PE4: M-payment is useful when I want to transfer money	0.75				
PE5: M-payment helps in getting services more effectively	0.76				
Effort Expectancy (EE)		0.86	0.90	0.65	0.80
EE1: Learning how to use m-payment is easy	0.77				
EE2: M-payment is clear and understandable	0.81				
EE3: Learning of m-payment usage is less time-consuming	0.82				
EE4: M-payment is easy to use	0.85				
EE5: It is easy to become skillful in using m-payment	0.77				
Social Influence (SI)		0.87	0.91	0.66	0.81
SI1: People who are important to me advised me to use m-payment	0.82				
SI2: People who influence my behaviour think that I should use m-payment	0.83				
SI3: People who are close to me are using m-payment	0.74				
SI4: People whose opinion I value prefer that I use m-payment	0.80				
SI5: People who are close to me recommended me to use m-payment	0.85				
Facilitating Condition (FC)		0.83	0.88	0.66	0.81
FC1: I have the resources necessary to use m-payment	0.82				
FC2: I have enough knowledge necessary to use m-payment	0.82				
FC3: I have the required gadgets needed to use m-payment	0.81				
FC4: It is very easy to get the needed information to use m-payment	0.79				
Hedonic Motivation (HM)		0.85	0.90	0.68	0.83
HM1: Using the features of m-payment is fun	0.82				
HM2: Using m-payment is enjoyable	0.86				
HM3: I feel excited using m-payment	0.82				
HM4: I like to use m-payment for any kind of payment	0.80				
Price Saving (PS)		0.80	0.88	0.71	0.84
PS1: Services offered by m-payment are inexpensive	0.87				
PS2: M-payment offers good value for money	0.88				
PS3: Money is saved with the usage of m-payment	0.78				
Habits (HB)		0.90	0.93	0.71	0.84

Construct Name	Loadings	CA	CR	AVE	DV
HB1: It became a habit for me to use m-payment	0.83				
HB2: M-payment has become a habit when I think about banking services	0.86				
HB3: I must use m-payment for all my banking transactions	0.83				
HB4: I am addicted to using m-payment	0.80				
HB5: Use of m-payment has become natural to me	0.90				
Perceived Trust (PT)		0.94	0.96	0.81	0.90
PT1: M-payment is trustworthy	0.89				
PT2: I believe transactions done through m-payment are secure	0.93				
PT3: M-payment assures your transactions	0.92				
PT4: M-payment is reliable	0.91				
PT5: M-payment can be completely trusted	0.86				
Continuance Intention (CI)		0.91	0.93	0.74	0.86
CI1: I intend to continuously use m-payment	0.81				
CI2: M-payment provides good payment services	0.86				
CI3: My intention is to continue using m-payment	0.88				
CI4: I would strongly recommend the use of m-payment	0.90				
CI5: I intend to use m-payment frequently	0.86				

CA = Cronbach Alpha, CR = Construct Reliability, AVE = Average Variance Explained, DV = Discriminant Validity.
Source: Authors' own compilation.

The Structural Equation Model

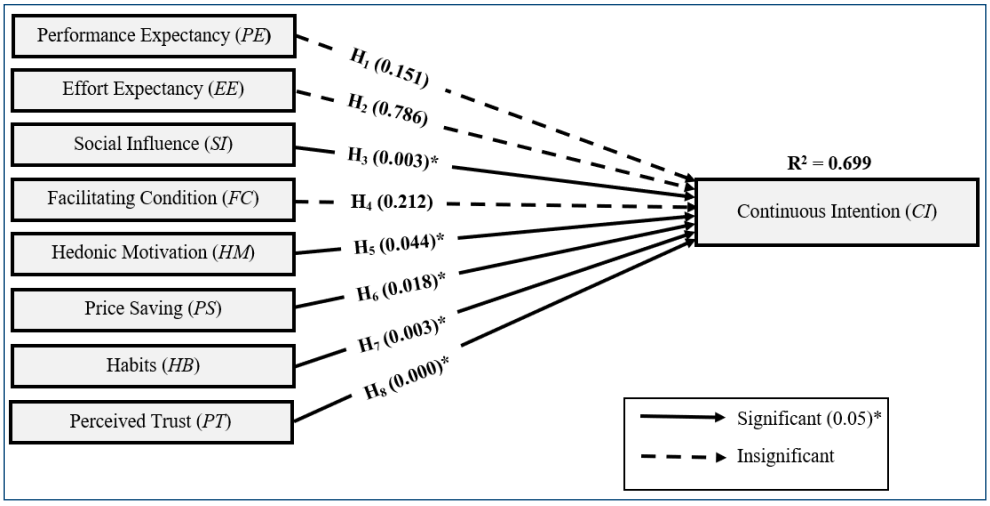
To determine the relationship between the proposed models of mobile payment applications, structural equation modelling was conducted using Smart PLS. The results are depicted in Table 3, and it is found that five constructs, namely SI, HM, PS, HB, and PT, positively influence the user's CI to use mobile payment applications. At the same time, three constructs, namely PE, EE, and FC, do not positively influence CI, as the p-value is greater than 0.05. Thus, it can be concluded that hypotheses H_3, H_5, H_6, H_7, and H_8 are supported, whereas H_1, H_2, and H_4 are not supported. Additionally, the R-square value for CI is 0.699, which means that the proposed model was able to explain a variation of 69 per cent for continuously using the mobile payment applications, which is in line with an earlier study by Karjaluoto et al. (2020).

Table 3: Result of Structural Model and Hypothesis Status

Hypothesis	Relation	Path Coefficients	P-Values	Hypothesis Supported?	R-Square
H_1	PE → CI	0.071	0.151	No	**0.699**
H_2	EE → CI	0.017	0.786	No	
H_3	SI → CI	0.144	**0.003***	**Yes**	
H_4	FC → CI	0.081	0.212	No	
H_5	HM → CI	0.115	**0.044***	**Yes**	
H_6	PS → CI	0.155	**0.018***	**Yes**	
H_7	HB → CI	0.145	**0.003***	**Yes**	
H_8	PT → CI	**0.357**	**0.000***	**Yes**	

**Significant at 0.05.*

Source: Authors' own compilation.



Source: Authors' own compilation.

Fig. 2: A Tested Model for Continuance Intention

Moderating Effects

To examine the moderating effects of the demographic characteristics on the pairs of the proposed model, each of the demographic variables was classified into two major groups, as suggested by Henseler and Fassott (2010). Path coefficient and standard error of each category were calculated by running the proposed model using Smart PLS software. Moreover, t-values for each demographic variable were computed using the Chin formula (Chin, 2000), as depicted in Table 4. The relation of PE to CI is moderated by experience, EE to CI is moderated by income, HB to CI is moderated by education and income, and PT to CI is moderated by income, occupation, location, experience, and purpose. Thus, the hypothesis (H_9) is partially supported.

Table 4: Results of Moderating Effects

Paths	*T-Values for Moderating Variables*						
	Gender	*Education*	*Income*	*Occupation*	*Location*	*Experience*	*Purpose*
PE → CI	0.54	0.47	−0.88	0.74	0.03	**−2.76***	−0.13
EE → CI	1.02	−1.79	**−2.08***	1.89	−1.29	−0.12	−0.91
SI → CI	−1.08	−1.00	0.62	−0.75	0.12	0.96	0.14
FC → CI	−1.03	1.29	1.90	−1.30	−0.81	1.18	−0.08
HM → CI	−0.92	0.69	−0.29	0.68	−1.70	−1.44	−1.78
PS → CI	1.16	1.02	−0.27	0.09	1.65	−0.23	0.54
HB → CI	1.39	**−2.83***	**−2.04***	1.73	−1.59	−0.53	−0.21
PT → CI	−1.32	0.86	**2.17***	**−2.46***	**2.33***	**2.16***	**2.04***

**Significant at 0.05 (1.96).*

Source: Authors' own compilation.

Discussions and Implications

This section deals with the findings of the study having theoretical and practical implications.

Theoretical Implications

This study tried to examine the factors that influence the adoption and use of mobile payment applications in the state of Goa, by using an extended UTAUT2 model and

filling the missing gap in the literature. The findings of the study reveal that SI, HM, PS, HB, and PT positively influence the intention of users to adopt and use mobile payment applications. On the other hand, PE, EE, and FC do not influence the continuance intention. It is found, from the results presented above, that perceived trust (PT) is the strongest predictor of usage of mobile payment applications, with a path coefficient value of 0.357. The user needs to link the bank account to use mobile payment applications. All the financial and personal information is exchanged with merchants, technology providers, telecom service providers, and payment gateways during this process. Thus, it is essential to protect sensitive information about the users. If this trust is ensured and informed among the users, only then will they adopt and use mobile payment applications. Therefore, all the marketing strategies must be directed towards creating and maintaining the trust towards mobile payment applications. The result of the study is in line with the previous studies conducted on mobile payment adoption by Indrawati and Putri (2018), Madan and Yadav (2016), and Slade et al. (2015).

The second strongest predictor of continuance intention (CI) to use mobile payment applications is price saving (PS), with a weight of 0.155. The result is consistent with earlier studies of mobile payment adoption by Deningtyas and Ariyanti (2017), Indrawati and Putri (2018), Madan and Yadav (2016), and Soodan and Rana (2020). The reason is, whenever users make payments using mobile applications, there is a chance of winning various rewards, in the form of coupons, cash-back, offers, discounts, and so on, which is not the case while making the payment in an offline mode. Hence, the promotion strategy must be focused on providing various rewards to all users of mobile payment applications. Price saving (PS) can be one of the motivational factors to use mobile payment applications on a regular basis.

Habits (HB) also received particular attention from the users of mobile payment applications, as it is the third strongest predictor of continuance intention to use the applications, with a coefficient of 0.145. The fact is that most people use a smartphone, and it has become one of the important accessories of life. Thus, it can be concluded that using various applications is natural; in the same way, it becomes a habit for users to use mobile payment applications. It is observed that the result of the study is similar to previous studies on mobile payment adoption by Deningtyas and Ariyanti (2017), Gupta and Arora (2020), Hussain et al. (2019), Indrawati and Putri (2018), Karjaluoto et al. (2020), Sivathanu (2019), and Slade et al. (2015).

Social influence (SI) is found to be a significant determinant of continuance intention to adopt and use mobile payment applications, with a coefficient of 0.144. The result is in line with previous works of Deningtyas and Ariyanti (2017), Hussain et al. (2019), Indrawati and Putri (2018), Madan and Yadav (2016), Sivathanu (2019), Slade et al. (2015), and Soodan and Rana (2020). It means that the recommendation and opinions of those who are important influence the purchase decision or selection. Thus, any positive word of mouth, advice, and recommendation can attract new users to mobile payment applications.

The last important predictor in the adoption and use of mobile payment technology is hedonic motivation (HM), with a weight of 0.115. The results are consistent with past studies on mobile payment adoption by Deningtyas and Ariyanti (2017), Indrawati and Putri (2018), Sivathanu (2019), and Soodan and Rana (2020). This could be because using payment applications brings excitement, enjoyment, and joy in the lives of the users. It could also mean that users are happy with the features provided by the applications, especially the scratch card feature after making a payment, which reveals rewards.

The result of the proposed model indicates no relationship between performance expectancy (PE) and continuance intention (CI) to use mobile payment applications, which is in contradiction to the previous works of mobile payment adoption by Deningtyas and Ariyanti (2017), Gupta and Arora (2020), Hussain et al. (2019), Indrawati and Putri (2018), Slade et al. (2015), and Soodan and Rana (2020). Moreover, the study also depicted that effort expectancy (EE) does not influence users' intention to use mobile payment applications. The results are in line with Deningtyas and Ariyanti (2017), Indrawati and Putri (2018), Madan and Yadav (2016), Slade et al. (2015), and Soodan and Rana (2020). In the proposed model, facilitating condition (FC) was conceptualised to positively influence continuance intention; however, after confirmation, it was found to be statistically insignificant, which is in line with

the earlier studies of Deningtyas and Ariyanti (2017), Indrawati and Putri (2018), and Slade et al. (2015). It can be concluded that users of mobile payment applications do not give importance to performance improvement, ease of use, and resources provided by service providers, other than payment services.

The study conceptualised that the moderating effect of gender, education, income, occupation, location, experience, and purpose will moderate the relationship of PE, EE, SI, FC, HM, PS, HB, and PT on CI to use mobile payment applications. The result confirmed that the variables moderated only a few relationships. Education moderated the habit (HB) and continuance intention (CI) relationship, whereas income moderated the effort expectancy (EE), habit (HB), and perceived trust (PT) relationship on continuance intention (CI) to use mobile payment applications. Similarly, occupation, income, experience, and purpose moderated the relationship between perceived trust (PT) and continuance intention (CI). Moreover, experience also moderated performance expectancy (PE) on continuance intention (CI).

Practical Implications

The success of a business depends on how the company can manage, satisfy, and retain its customers. The same rule applies to service providers or developers of mobile payment applications. When a mobile payment application is launched, what is the acceptance and usage rate? Ultimately, its success depends on its adoption and usage. The present study provides an insightful thought for developers and service providers of mobile payment applications. First, while promoting their applications, service providers need to develop trust among its users. They should emphasise on the privacy and security of the information stored on the application. Since the bank account is linked to the use of mobile payment applications, users are doubly careful about the safety and security of the application. Second, to increase the usage of mobile payment applications, the service providers need to provide some benefits of using the applications to the users, in the form of rewards, cash-back offers, discounts, coupons, and so on.

Thirdly, the service provider should choose a powerful influencer or brand ambassador to promote and recognise the mobile payment application. Their opinion and reviews can create a social impact and will motivate the users to use the application. As seen from the study, social influence plays a very important role in the adoption and usage of mobile payment applications. Lastly, the developers can add new features and tools to the applications, where its usage will give some kind of joy, relaxation, and enjoyment to the users. They will make people habituated to using mobile payment applications on a continuous basis. The study also provides an insight to other stakeholders, namely the government, academicians, researchers, and policymakers, to improve the policy for better use of mobile payment applications.

Limitations and Future Research Directions

The study attempted to examine the factors influencing users' continuance intention to adopt and use mobile payment applications, using the extended UTAUT2 model; the study further tried to fill the missing literature gap, with productive results. There is always a possibility of inherent limitations. The present study may suffer from sample selection bias, as primary data was collected through online survey. Furthermore, the sample was unevenly distributed, with more young people, which might influence the results of the study. The sample size was limited to 203 respondents; a larger sample may provide better insight. Future studies can select the sample size as suggested by Hair et al. (2019). The study analysed the impact of eight constructs adopted from UTAUT2, along with perceived trust (PT), on continuance intention (CI) to use mobile payment applications. However, there are other factors, such as perceived risk, self-efficiency, innovativeness, and so on, which may be considered in future research. It may be recommended that the proposed model can be tested in developed and developing countries to provide better insight, in terms of adoption and usage of mobile payment applications. In addition, a comparative analysis may be possible on cross-country or cross-regional basis to see the cultural differences and how they influence consumer behaviour.

References

Akturan, U., & Tezcan, N. (2012). Mobile banking adoption of the youth market: Perceptions and intentions. *Marketing Intelligence and Planning*, *30*(4), 444-459.

Alalwan, A. A., Dwivedi, Y. K., & Rana, N. P. (2017). Factors influencing adoption of mobile banking by Jordanian bank customers: Extending UTAUT2 with trust. *International Journal of Information Management*, *37*(3), 99-110.

Castanha, J., Pillai, S. K. B., & Indrawati. (2021). What influences consumer behavior towards information and communication technology applications: A systematic literature review of UTAUT2 model. *Advances in Intelligent Systems and Computing: ICT Systems and Sustainability: Proceedings of ICT4SD 2020*, (vol. 1, pp. 317-327). Singapore: Springer Nature. Retrieved from https://doi.org/10.1007/978-981-15-8289-9_30

Chen, L., & Nath, R. (2008). Determinants of mobile payments: An empirical analysis. *Journal of International Technology and Information*, *17*(1), 9-20.

Cheong, J. H., Park, M. C., & Hwang, J. H. (2004). *Mobile payment adoption in Korea: Switching from credit card.* ITS 15th Biennial Conference, Berlin, 4-7.

Chin, W. W. (2000). Frequently asked questions – Partial least squares and PLS-graph. Retrieved June 9, 2010, from http://discnt.cba.uh.edu/chin/plsfaq.htm

Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin*, *52*(4), 281-302.

Cudjoe, A. G., Anim, P. A., & Nyanyofio, J. G. N. T. (2015). Determinants of mobile banking adoption in the Ghanaian banking industry: A case of access bank Ghana limited. *Journal of Computer and Communications, 3*(1), 1-19.

Deningtyas, F., & Ariyanti, M. (2017). Factors affecting the adoption of e-payment on transportation service application using modified unified technology of acceptance and use of technology 2 model. *International Journal of Management and Applied Science*, *3*(7), 38-43.

Escobar-Rodríguez, T., & Carvajal-Trujillo, E. (2014). Online purchasing tickets for low cost carriers: An application of the unified theory of acceptance and use of technology (UTAUT) model. *Tourism Management*, *43,* 70-88.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39-50.

Government of India. (2022). e-RUPI – Digital payment solution. Retrieved February 11, 2022, from https://www.india.gov.in/spotlight/e-rupi-digital-payment-solution

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

Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage Publications.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis: A global perspective* (7th ed.). Pearson Education International.

Hair, J. F., Gabriel, M. L. D. S., Silva, D., & Junior, S. B. (2019). Development and validation of attitudes measurement scales: Fundamental and practical aspects. *Management Journal*, *54*(4), 490-507.

Hair, J. F., Hult, G. T., Ringle, C. M., & Sarstedt, M. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. California: Sage Publications, Inc.

Henseler, J., & Fassott, G. (2010). Testing moderating effects in PLS path models: An Illustration of available procedures. V. Esposito Vinzi et al. (Eds.), *Handbook of Partial Least Squares* (pp. 713-735). Springer Handbooks of Computational Statistics.

Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. *Advances in International Marketing*, *20,* 277-319.

Hussain, M., Mollik, A. T., Johns, R., & Rahman, M. S. (2019). M-payment adoption for bottom of pyramid segment: An empirical investigation. *International Journal of Bank Marketing*, *37*(1), 362-381. doi:https://doi.org/10.1108/IJBM-01-2018-0013

IBEF. (2020). Digital payments growing in India at 12.7% CAGR: KPMG. Retrieved July 7, 2020, from https://www.ibef.org/news/digital-payments-growing-in-india-at-127-cagr-kpmg

Indrawati & Tohir, L. M. (2016). *Predicting smart metering acceptance by residential consumers: An Indonesian perspective.* 4th International Conference on Information and Communication Technology

(ICoICT), Bandung (pp. 104-109). doi:10.1109/ICoICT.2016.7571892

Indrawati & Putri, D. A. (2018). *Analyzing factors influencing continuance intention of e-payment adoption using modified UTAUT 2 model.* 6th International Conference on Information and Communication Technology (ICoICT), (vol. 2018, no. 5, pp. 167-173).

Indrawati, Hasana, S. A., & Pillai, S. K. B. (2020a). User's continuance intention towards hospitality service application. In S. Noviaristani, H. M. Hanafi & D. Trihanondo (Eds.), *Understanding Digital Industry* (pp. 76-80). London: Taylor and Francis Group.

Indrawati, Pradhina, N. P., & Pillai, S. K. B. (2020b). Customer continuance intention towards digital banking application. In S. Noviaristani, H. M. Hanafi & D. Trihanondo (Eds.), *Understanding Digital Industry* (pp. 103-106). London: Taylor and Francis Group.

Karjaluoto, H., Shaikh, A. A., Leppäniemi, M., & Luomala, R. (2020). Examining consumers' usage intention of contactless payment systems. *International Journal of Bank Marketing*, *38*(2), 332-351. doi:https://doi.org/10.1108/IJBM-04-2019-0155

Kim, C., Mirusmonov, M., & Lee, I. (2010). An empirical examination of factors influencing the intention to use mobile payment. *Computers in Human Behavior*, *26*(3), 310-322.

Kuganathan, K. V., & Wikramanayake, G. N. (2014). *Next generation smart transaction touch points*. International Conference on Advances in ICT for Emerging Regions (ICTER) (pp. 96-102), Colombo.

Kwateng, K. O., Atiemo, K. A. O., & Appiah, C. (2019). Acceptance and use of mobile banking: An application of UTAUT2. *Journal of Enterprise Information Management*, *32*(1), 118-151.

Lee, W. O., & Wong, L. S. (2016). Determinants of mobile commerce customer loyalty in Malaysia. *Procedia-Social and Behavioral Sciences*, *224,* 60-67.

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

Merhi, M., Hone, K., & Tarhini, A. (2019). A cross-cultural study of the intention to use mobile banking between Lebanese and British consumers: Extending UTAUT2 with security, privacy and trust. *Technology in Society*, *59,* 1-12.

Min, Q., Ji, S., & Qu, G. (2008). Mobile commerce user acceptance study in China: A revised UTAUT model. *Tsinghua Science and Technology*, *13*(3), 257-264.

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

Renjan, R., & Kamal, A. (2019). Perception of smartphone users towards mobile payment system: An empirical study. *International Journal of Recent Technology and Engineering, 8*(1), 424-434.

Sharma, R., & Mishra, R. (2014). A review of evolution of theories and model of technology adoption. *Indore Management Journal*, *6*(2), 17-29.

Shaw, N., & Sergueeva, K. (2019). The non-monetary benefits of mobile commerce: Extending UTUAT2 with perceived value. *International Journal of Information Management*, *45,* 44-55.

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

Slade, E., Williams, M., Dwivedi, Y., & Piercy, N. (2015). Exploring consumer adoption of proximity mobile payments. *Journal of Strategic Marketing*, *23*(3), 209-223. doi:https://doi.org/10.1080/0965254X.2014.914075

Soodan, V., & Rana, A. (2020). Modeling customers' intention to use e-wallet in a developing nation: Extending UTAUT2 with security, privacy and savings. *Journal of Electronic Commerce in Organizations*, *18*(1), 89-114. doi:https://doi.org/10.4018/JECO.2020010105

Statista. (2020). Digital payments in India – Statistics and facts. Retrieved July 7, 2020, from https://www.statista.com/topics/5593/digital-payment-in-india/#:~:text=India%20was%20estimated%20to%20see,the%20world's%20digital%20payment%20market

Tarhini, A., Alalwan, A. A., Shammout, A. B., & Al-Badi, A. (2019). An analysis of the factors affecting

mobile commerce adoption in developing countries towards an integrated model. *Review of International Business and Strategy*, *29*(3), 157-179.

Venkatesh, V., & Morris, M. G. (2000). Why men don't ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage. *MIS Quarterly*, *24*(1), 115-139.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, *27*(3), 425-478.

Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, *36*(1), 157-178.

Wikipedia. (2020). Mobile payments. Retrieved July 7, 2020, from https://en.wikipedia.org/wiki/Mobile_payment

Xu, X. (2014). Understanding users' continued use of online games: An application of UTAUT2 in social network games. *MMEDIA*.